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ABSTRACT

This publication provides a comprehensive overview of work done across all parts of the National Center for Education Statistics (NCES). Each issue contains short publications, summaries, and descriptions that cover all NCES publications and data products released during a 3-month period. Each issue also contains a message from the NCES on a timely subject in education statistics and a featured topic with invited commentary. The focus of this issue is the Data on Vocational Education (DOVE) system, which provides detailed information on vocational education at the national level. The issue also contains reports on NCES work in: (1) elementary and secondary education; (2) postsecondary education; (3) public, state, and federal libraries; (4) international statistics; (5) crosscutting statistics; (6) methodology; and (7) data products, other publications, and funding opportunities. (Contains 10 tables and 22 figures.) (SLD)

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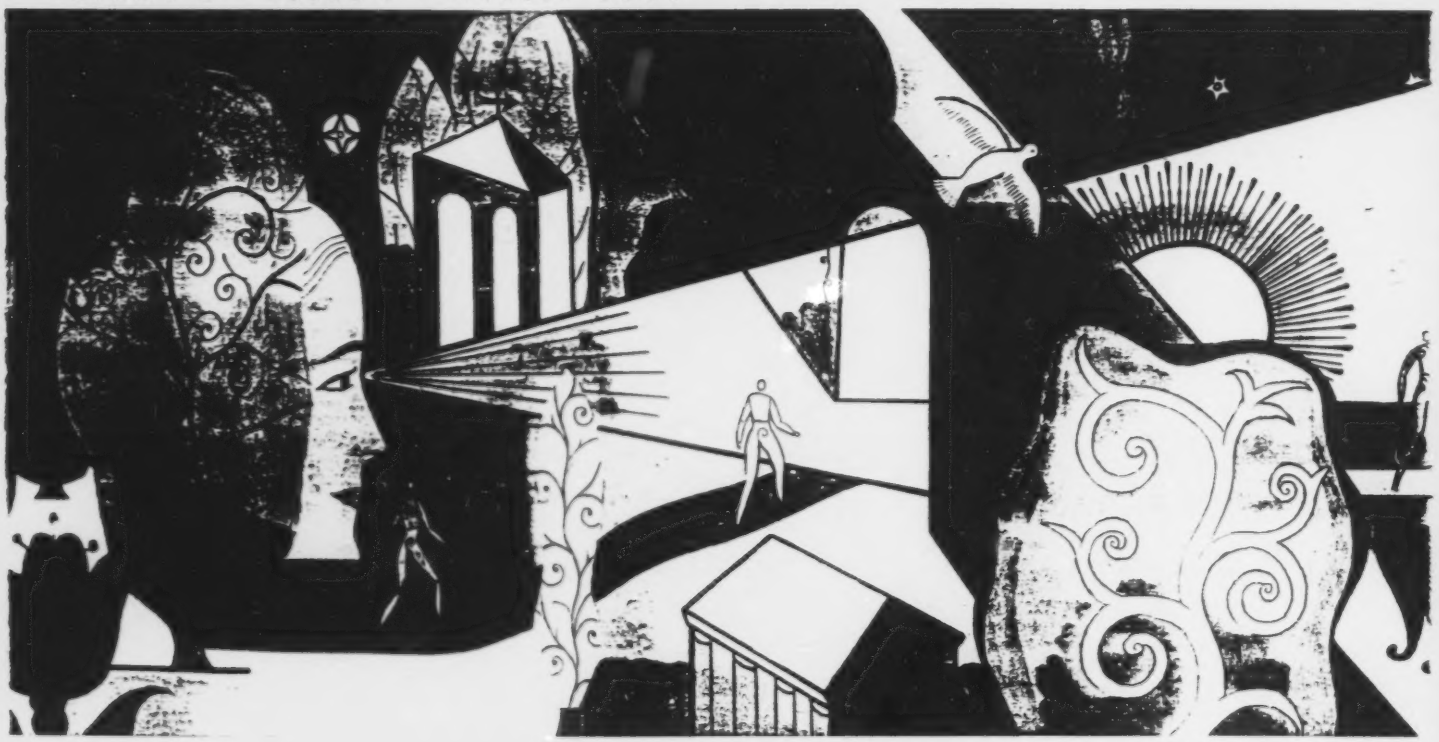

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NCES 2001-603

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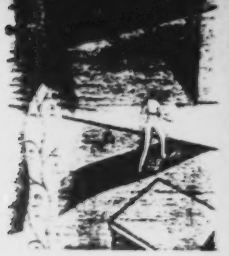
Editorial Note



National Center for Education Statistics

The National Center for Education Statistics (NCES) fulfills a congressional mandate to collect and report "statistics and information showing the condition and progress of education in the United States and other nations in order to promote and accelerate the improvement of American education."

Education Statistics Quarterly

Purpose and goals

At NCES, we are convinced that good data lead to good decisions about education. The *Education Statistics Quarterly* is part of an overall effort to make reliable data more accessible. Goals include providing a quick way to

- identify information of interest;
- review key facts, figures, and summary information; and
- obtain references to detailed data and analyses.

Content

The *Quarterly* gives a comprehensive overview of work done across all parts of NCES. Each issue includes short publications, summaries, and descriptions that cover all NCES publications and data products released during a 3-month period. To further stimulate ideas and discussion, each issue also incorporates

- a message from NCES on an important and timely subject in education statistics; and
- a featured topic of enduring importance with invited commentary.

All NCES publications appearing in volume 2 (issues 1 through 4) of the *Quarterly* are indexed at the end of this issue. Publications in the *Quarterly* have been technically reviewed for content and statistical accuracy.

General note about the data and interpretations

Many NCES publications present data that are based on representative samples and thus are subject to sampling variability. In these cases, tests for statistical significance take both the study design and the number of comparisons into account. NCES publications only discuss differences that are significant at the 95 percent confidence level or higher. Because of variations in study design, differences of roughly the same magnitude can be statistically significant in some cases but not in others. In addition, results from surveys are subject to nonsampling errors. In the design, conduct, and data processing of NCES surveys, efforts are made to minimize the effects of nonsampling errors, such as item nonresponse, measurement error, data processing error, and other systematic error.

For complete technical details about data and methodology, including sample sizes, response rates, and other indicators of survey quality, we encourage readers to examine the detailed reports referenced in each article.

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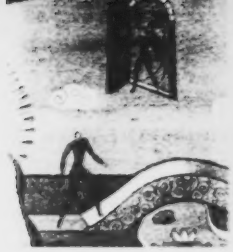

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NOTE FROM NCES

Val Plisko, Associate Commissioner,
Early Childhood, International & Crosscutting Studies Division

Responding to a Critical Need for Vocational Education Data

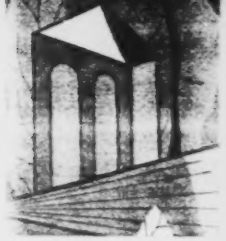
Crises can spur improvement and lead to novel approaches to find solutions. Such a crisis occurred in the area of vocational education information in the early 1980s. In the featured article for this issue of the *Quarterly*, Lisa Hudson recounts how the National Center for Education Statistics (NCES) developed the Data on Vocational Education (DOVE) system in the mid-1980s to address this crisis. Since that time, DOVE has evolved into a system that draws its data from several national data sources, supplemented by special studies to fill information gaps. As such, it has developed into a possible model for other NCES efforts that necessarily cut across institutional boundaries, levels of education, and cross-sectional and longitudinal data collections. In a division responsible for crosscutting work at NCES, I am keenly aware of the potential for synergy that such an approach can offer. I also recognize the challenges that this type of system poses for coordination, analysis, and measurement.

The DOVE system evolved to meet a clear need. Policymakers at all levels needed a reliable, accurate source for information on vocational education, an important segment of American education at both the secondary and postsecondary levels. To bridge different types of vocational education providers and participants as well as levels of schooling and training required a new approach. DOVE diverges from regular NCES data collections in that it synthesizes data from a wide range of preexisting education surveys. It works as a "derived," or "synthetic," system, pooling information from a host of sources. The originators of DOVE found that nationally representative sample surveys conducted by NCES and other federal offices could respond to several of the key policy issues that Congress and other policymakers needed addressed. Much of this information was already available, although work was needed to fill information gaps and apply consistent concepts and definitions.

The DOVE approach also allows NCES to relate vocational education to the larger education system or to link experiences at the secondary level to those at the postsecondary level. Furthermore, the variety of cross-sectional and longitudinal surveys in the DOVE system provides a rich data source for policy analysis and research, as well as for basic descriptive purposes. Nonetheless, the DOVE system must continue to evolve in the face of challenges—challenges that may confront any derived system that is so dependent on cooperation across different offices and coordination across different data sets. These challenges fall into three areas: institutional, conceptual, and methodological.

Meeting Challenges in Vocational Education Data Development

Institutional challenges. Working across different data sets requires working across different offices and greater collaboration across the Center and the Department of Education. This institutional challenge is common to much of the crosscutting work that our division undertakes. More specifically, bringing together studies that began life as separate surveys presents analytical challenges. Modifying surveys to better address vocational education



can also conflict with institutional patterns of behavior; because regular data collections are often conducted to report on trends, a premium is placed on maintaining consistency in data elements over time. To address some of these issues, NCES has institutionalized for DOVE some of the features that characterize a major data collection system, including a Technical Review Panel and mechanisms such as a written planning document and a system for survey review designed to encourage collaboration. At the same time, DOVE does not have the visibility of a regular data collection; for example, it does not appear in the NCES budget, and so must continuously press for recognition and resources.

Conceptual challenges. Conceptual challenges arise from the ongoing debate on what constitutes vocational education, its role in education as a whole, and the appropriate goals and outcomes for vocational education. This is true as well for other topical areas of inquiry that garner public attention and debate. Conceptual challenges will vary depending on the purpose of the data collection system. For example, vocational education has its unique conceptual challenges; a data collection system for monitoring the progress of minorities in education would face a different set of conceptual challenges, as would a system to assess education finance. Vocational education itself, particularly at the secondary level, is also undergoing profound changes. Reforms such as the integration of vocational and academic education, the articulation of secondary and postsecondary education, and the adoption of high school career clusters, service learning programs, and applied academic courses are further blurring distinctions between vocational and academic education, thereby making vocational education harder to define and identify. Again, keeping up with the pace of change confronts other topical areas as well. For example, new forms of telecommunications and distance learning require that we continuously upgrade our definitions of advanced technology (while also maintaining the ability to monitor change over time). In response, we often rely upon quicker vehicles, such as the NCES Fast Response Survey System (FRSS) and Postsecondary Education Quick Information System (PEQIS), to gather such information.

Methodological challenges. Methodological challenges include the need to balance basic descriptive information and policy-relevant information. This balance affects not just the questions asked but also sampling procedures, the timing of surveys, and the type of survey that is conducted. Sampling issues also arise because the populations that are often of the most interest to policymakers (e.g., disabled students or limited-English-proficient students) are those for whom information is most difficult to collect in general-purpose surveys. Finally, we need to refine both our measures of outcomes of vocational education and our measures of processes, such as the quality of instruction in vocational courses.

Some of these challenges will surely be overcome in the near future, while others may prove to be more resistant to change. Nonetheless, the DOVE system could someday be the model for other data collection systems that focus on specific sectors of education, such as mathematics and science education, special education, or lifelong learning. Advantages that could ensue include increasing the analytic potential to inform education decisionmakers and researchers; reducing the data collection burden on survey respondents; and, potentially, lowering costs. DOVE has shown the possibilities that a synthetic system can offer. It has also demonstrated how such a system—through the continuous cooperation of our sponsors, respondents, and data users—can work.

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Featured Topic: Vocational Education Data

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The Data on Vocational Education (DOVE) System

Lisa Hudson, Education Statistician, NCES Data Development Program

This article describes the NCES Data on Vocational Education (DOVE) system, this issue's featured topic.

Vocational education is designed to ensure that students obtain marketable job skills that complement their academic skills. While the importance of obtaining job skills has long been recognized for students who do not continue their education beyond high school, these skills are also important for the large number of students who need or want to combine work with college attendance, who are unsure of their future education plans, who plan to earn a subbaccalaureate degree (i.e., a postsecondary credential below the baccalaureate level), or who plan to enter a technical field for which a "hands-on" or applied curriculum provides valuable groundwork for more abstract study in later years. Yet this important sector of the education system is often overlooked. Most people would be surprised to learn what we in fact know about vocational education—for example, that almost all public high school students take at least one vocational education course, that 16 percent of all public high school credits are earned in vocational education, and that 49 percent of all students seeking subbaccalaureate degrees major in vocational fields.

These statistics were derived from the National Center for Education Statistics (NCES) Data on Vocational Education (DOVE) system, a data collection and reporting system designed to provide detailed information on vocational education at the national level. As discussed below, the DOVE system was developed to meet Congress' need for data to inform federal vocational education legislation. This information is also of use to state and local vocational education administrators, who need data to support their efforts to allocate resources, defend program expenditures, and develop policies and programs for vocational education. By focusing on a major sector of secondary and postsecondary education, this information also helps

provide a more complete description of the American education system.

The DOVE system differs significantly from the typical NCES data collection effort because it is a "derived," or "synthetic," system that collects data from a wide range of preexisting education surveys. Since vocational education is embedded in the larger framework of general education, it makes sense that the data collection system for vocational education should itself be embedded in general education surveys. But this "sensible" system belies a troubled past; NCES collection of data on vocational education has a relatively brief but tumultuous history.

History of DOVE[1]

The federal government has supported vocational education programs since 1917, when the Smith-Hughes Act was passed to help schools train workers for the country's rapidly growing economy. In the 1960s, the focus of federal legislation shifted to ensuring that all students had equal access to vocational education programs. With this shift in focus (and with improved procedures for data collection and analysis) came an interest in collecting detailed national data to track student participation in vocational education. As a result, Congress instituted new requirements for states to include information on vocational education expenditures and student enrollments in their annual reports to Congress. Vocational education enrollments were to be broken out by race, student disability status, and other student characteristics, for all secondary, postsecondary, and adult education students in the state.

Initially, responsibility for collecting these data was given to the Bureau of Occupational and Adult Education (BOAE), the precursor to today's Office of Vocational and Adult Education (OVAE). Unfortunately, because these new data requirements were beyond most states' recordkeeping capabilities at the time, missing, inconsistent, and noncomparable data were common. To correct these problems, Congress established Project Baseline to work with individual states to improve their administrative records and data submissions. Nonetheless, the BOAE data collection remained problematic and was discontinued in 1976.

But Congress had not given up. The 1976 Amendments to the Vocational Education Act maintained the requirement for data collection on all schools and students, but moved responsibility for the collection of these data from BOAE to NCES. Given the problems encountered by BOAE, NCES spent almost 2 years designing a new data collection system, called the Vocational Education Data System (VEDS). But VEDS still had to rely on the collection of data from state administrative records, and this information remained intractable.

NCES was not oblivious to this problem. A 1983 internal validity study of VEDS data concluded that the data suffered from a lack of comparability. Not only were data inconsistent from one state to another, they were also inconsistent within individual states, when data from different state sources were compared. Data also varied from year to year in inexplicable ways. Comparability was also limited by some states' continued inability to provide complete data.

Many factors accounted for these data problems, but the root cause was simply that the data collection system was inappropriate for the task at hand. State administrative records are designed to meet the needs of states and localities, and thus reflect the unique education conditions, policies, and structures of each state, as well as their specific data-gathering formats and capabilities. For example, one state may choose to count vocational education enrollments at the course level, so that a student who enrolls in two vocational courses would count as two course-enrollments; another state might count these enrollments at the student level, so that the same student would count as one student-enrollment. States may also differ in the courses included in their definition of vocational education or may categorize students differently by race, economic status, and other measures. Finally, the collection of records data on all schools, teachers, or students is costly and time-consuming; most states can afford to collect such information for only the most basic and critical features of their education systems. VEDS was in effect asking states to use their administrative records in ways for which they were not intended and which may, in some cases, have decreased their value for state purposes while at the same time increasing costs.

Although both Project Baseline (prior to 1976) and NCES had worked with states to implement quality control procedures—and many improvements were made—the complexity of the data required by the VEDS mandate ultimately extended beyond the limits of this approach to data collection. These continuing problems led the Office of

[1]This section draws heavily from a report by Hoachlander and Levesque (1993) that includes a more detailed history of the collection of national data on vocational education.

Management and Budget (OMB) to deny approval for the collection of VEDS data after 1983—making VEDS the only NCES data collection to have this ignoble distinction. VEDS also became a key example of the need for larger changes within NCES. In 1986, the National Academy of Sciences released a report evaluating the quality of NCES data. The report noted a number of data quality problems in existence at that time and cited VEDS as illustrative of "virtually every problem encountered in our review" (Levine 1986, p. 15).

Difficult though VEDS may have been for NCES at the time, it motivated a number of changes that have improved the quality of NCES data. Chief among these changes were new review processes for data collections and reports, and the implementation of cooperative systems between NCES and state and local education representatives. These cooperative systems are designed to ensure that consistent standards are established and maintained whenever NCES data collections rely on the voluntary cooperation of states and localities. Finally, the VEDS experience led Congress to change its mandate for vocational education data—a change that led directly to improvements in the NCES vocational education data collection system. From the ashes of VEDS, the DOVE system arose.

The DOVE System

The Carl D. Perkins Vocational Education Act of 1984 directed NCES to develop "a national vocational education data reporting and accounting system using uniform definitions." While this mandate required the collection of information as detailed as that collected by VEDS, it differed from VEDS in one critical way—the 1984 mandate allowed NCES to collect data using sample surveys rather than census counts. This change freed NCES from a reliance on state administrative records, the data source that had proved infeasible in VEDS.

With the lessons learned from VEDS and the flexibility to use sample surveys, NCES fashioned a new approach to vocational education data collection: the Data on Vocational Education system. The DOVE system "collects" data on vocational education by consolidating and analyzing information from existing NCES education surveys, supplemented by relevant surveys conducted by other federal offices and by special-purpose NCES surveys conducted through the Fast Response Survey System (FRSS) and the Postsecondary Education Quick Information System (PEQIS).

The DOVE system has three main advantages over VEDS. Most importantly, DOVE data collections are almost all nationally representative sample surveys that use common, comparable definitions and data elements. (A few DOVE data collections are census collections that rely on cooperative systems to ensure valid data reporting.) It is because of its uniformity in data definitions and data collection strategies that the DOVE system can effectively overcome the data-quality problems that plagued VEDS. Second, the DOVE approach allows NCES to relate vocational education to the larger education system or to other parts of the system. So, for example, postsecondary students who major in vocational fields can be compared to students who major in academic fields, high school students who take extensive numbers of vocational education courses can be compared to students who take little or no vocational education, and teachers of vocational education courses can be compared to teachers of academic or other elective courses. Third, the VEDS reliance on administrative records data provided a limited data set that at best (if it could have been collected in a consistent and comparable manner) would have yielded *counts* of students, faculty, courses, and other school features. Little can be done with administrative records data beyond such basic counting. In contrast, the wide range of cross-sectional and longitudinal surveys in the DOVE system provides a much richer data source for policy analysis and research purposes. With DOVE, one can explore, for example, how vocational education coursetaking interacts with academic coursetaking, how students who complete vocational education programs transition to the labor market or further education, and how the attrition rate of high school vocational education teachers compares to that of other teachers.

The DOVE system can be divided into two major components: first, a data collection component; second, a data-reporting component that disseminates the findings from analyses of DOVE data.

Data collection component

With the exception of special-purpose FRSS or PEQIS surveys, the DOVE data collection component relies on extant national surveys that contain information relevant to vocational education. Collectively, these data sources provide information on the vocational education system at the secondary and postsecondary levels, and on adult education and training taken for work-related reasons. In table 1, the DOVE data collections are divided into surveys of the secondary-level education system, surveys of the

Table 1.—Data collection sources for the Data on Vocational Education (DOVE) system

Data collection source	Sponsoring agency
Secondary-level data collections	
Common Core of Data (CCD)	NCES
High school transcript studies (HSTS)	NCES
National Assessment of Educational Progress (NAEP)	NCES
Schools and Staffing Survey (SASS)	NCES
Fast Response Survey System (FRSS)	NCES
Postsecondary and adult data collections	
Integrated Postsecondary Education Data System (IPEDS)	NCES
National Postsecondary Student Aid Study (NPSAS)	NCES
National Survey of Postsecondary Faculty (NSOPF)	NCES
National Household Education Survey (NHES), "Adult Education Interview"	NCES
National Assessment of Adult Literacy (NAAL)	NCES
Postsecondary Education Quick Information System (PEQIS)	NCES
Current Population Survey (CPS)	Census Bureau
Survey of Income and Program Participation (SIPP)	Census Bureau
Longitudinal data collections	
National Longitudinal Survey of 1972 (NLS-72)	NCES
High School and Beyond (HS&B)	NCES
National Education Longitudinal Study of 1988 Eighth-Graders (NELS:1988)	NCES
(Planned) Education Longitudinal Study of 2002 (ELS:2002)	NCES
Beginning Postsecondary Students Longitudinal Study (BPS)	NCES
National Longitudinal Survey of Youth (NLS-Y)	Bureau of Labor Statistics

postsecondary and adult education systems, and longitudinal surveys that span multiple education levels.

Data on student participation in vocational education provides a specific illustration of how DOVE is used to generate information. The DOVE system collects data on participation in vocational education from three main sources. At the secondary level, NCES routinely collects detailed information on the coursetaking of high school students from high school transcript studies. The most recent transcript study was for the high school class of 2000. These data provide a wealth of information on participation in vocational education that is far more accurate and complete than that obtained from other sources, such as student self-reports. These data have told us, for example, that

- over half (58 percent) of public high school graduates take at least three vocational education courses, and virtually all (97 percent) take at least one vocational education course;
- about one-fourth of public high school graduates take a concentrated vocational education program, with at least three courses taken in a *single* occupational area, such as business;
- about one out of every five public high school graduates who takes a concentrated vocational program also completes a rigorous "college prep" program; and
- over half (55 percent) of the public high school graduates who take concentrated vocational coursework enroll in a postsecondary institution within 2 years of high school graduation.

Although the transcript data were originally collected mainly to provide information on vocational education coursetaking (as part of an earlier National Assessment of

Vocational Education), they are also proving useful for other purposes, such as examining the academic course "pipelines" followed by high school students. An upcoming NCES report (*Trends in High School Academic Coursetaking: Mathematics, Science, English, and Foreign Language Course Completion: 1982 to 1998*) uses the transcript studies for this purpose.

At the postsecondary level, the National Postsecondary Student Aid Study (NPSAS) provides information on students' major program of study. In combination with the Beginning Postsecondary Students Longitudinal Study (BPS), these data can also be used to monitor the persistence rates and labor market outcomes of students who pursue vocational majors. Data collected indicate that

- about half (49 percent) of all subbaccalaureate students major in a vocational field;
- business, health, and computer and engineering technologies are the predominant vocational fields of study among subbaccalaureate students;
- among subbaccalaureate students, those pursuing a vocational major are more likely than those pursuing an academic major to have a previous postsecondary credential; and
- as the education level of their parents increases, subbaccalaureate students are less likely to major in vocational fields and more likely to major in academic fields.

Finally, data on the participation of adults in work-related education and training are collected periodically through the National Household Education Survey (NHES) "Adult Education Interview." The 1999 NHES found, for example, that

- almost one-fourth (23 percent) of all adults participate in a work-related course over a 12-month period; and
- participation in work-related courses increases with an adult's educational attainment: only 4 percent of adults who do not have a high school diploma participate in work-related courses, compared to 38 percent of those who have at least a bachelor's degree.

Analysis and reporting component

The data collections in the DOVE system provide the raw data for analyses. The specific analyses to be conducted are determined based on data availability, collaboration with other U.S. Department of Education offices, and input from experts in the field. To disseminate the findings from these analyses, NCES produces a number of reports. At the core of this reporting system is *Vocational Education in the United States*, a quadrennial publication. This report provides a comprehensive summary of the condition of vocational education, based on the most recent data available from all DOVE sources. To date, three editions of *Vocational Education in the United States* (in 2000, 1995, and 1992) have been published. Between editions of this report, NCES releases a number of more focused reports on specific vocational education topics or findings from specific survey efforts. The DOVE reports published since 1990 are listed in table 2.

NCES is currently preparing vocational education reports on

- labor market outcomes of high school graduates with various coursetaking patterns and high school employment and academic histories;
- education and program planning for high school students who do not expect to obtain a college degree;
- vocational programs in public high schools and less-than-4-year postsecondary institutions;
- trends in the participation of high school students in vocational education;
- trends in the participation of special populations of high school students—e.g., students with disabilities, economically disadvantaged students, and limited-English-proficient students—in vocational education; and
- participation of adults in education activities taken mainly for work-related reasons.

DOVE and the National Assessment of Vocational Education

In addition to providing the data for NCES analyses and reports, the DOVE system also contributes to the National Assessment of Vocational Education (NAVE), which has been mandated by Congress in each authorization of federal vocational education legislation since 1976.[2] Conducted by the Department of Education in conjunction with an independent advisory panel, NAVE is designed to inform debate on the reauthorization of federal legislation by providing information on vocational education in general and on the implementation of federal vocational education legislation in particular. Although NAVE studies typically conduct original data collections, the DOVE system

[2]These mandates occurred in 1976, 1984, 1990, and 1998.

Table 2.—DOVE reports published since 1990

Report	Publication year	Brief description
Occupational Programs and the Use of Skill Competencies at the Secondary and Postsecondary Levels: 1999 (NCES 2000-023)	2000	This E.D. Tab report presents a subset of the data collected from FRSS and PEQIS surveys on vocational education programs. The report focuses on the use of skill competency lists, the extent of industry involvement in developing or adopting competency lists, and the credentialing of student skill proficiencies.
Vocational Education in the United States: Toward the Year 2000 (NCES 2000-029)	2000	This Statistical Analysis Report presents a comprehensive overview of vocational education in the late 1990s, focusing on the economic and labor market context, trends in the size of vocational education, school-to-work transitions, students' academic preparation, and school reform efforts.
Students Who Prepare for College and a Vocation (NCES 1999-072)	1999	This Issue Brief examines high school students who complete both a vocational and a college preparatory curriculum. It examines the achievement gains and postsecondary participation rates of students who complete both curricula, and compares the likelihood that students who concentrate in different occupational program areas will also complete a college preparatory curriculum.
Trends in Participation in Secondary Vocational Education: 1982-1992 (NCES 96-004)	1996	This Statistical Analysis Report uses high school transcript data from 4 years (1982, 1987, 1990, and 1992) to examine changes in vocational education coursetaking, including enrollments overall and among students with different sociodemographic characteristics.
Vocational Education in the United States: The Early 1990s (NCES 95-024)	1995	This Compendium uses data from several NCES surveys to provide a comprehensive picture of vocational education in the early 1990s. Its emphasis is on secondary and postsecondary enrollments and on secondary vocational education teachers.
Vocational Coursetaking and Achievement: An Analysis of High School Transcripts and 1990 NAEP Assessment Scores (NCES 95-006)	1995	This Statistical Analysis Report describes, for the public high school class of 1990, the relationship between vocational coursetaking and academic achievement on the 1990 NAEP.
Vocational Education in G-7 Countries: Profiles and Data (NCES 94-005)	1994	This congressionally mandated Research and Development Report reviews data available on vocational education systems among the (then) G-7 countries.
Public Secondary School Teacher Survey on Vocational Education (NCES 94-409)	1994	This Statistical Analysis Report presents the results from an FRSS survey of public secondary school teachers. It compares the backgrounds and experiences of vocational and academic teachers and examines the teaching experiences of vocational teachers.
Vocational Education in the United States: 1969-1990 (NCES 92-669)	1992	This Compendium is the first comprehensive review by NCES of the status of vocational education. It reviews how this enterprise evolved over 2 decades, at the secondary and postsecondary levels.
A Comparison of Vocational and Non-Vocational Teachers (NCES 92-666)	1992	This Statistical Analysis Report compares public school vocational teachers to nonvocational teachers and compares vocational teachers in different program areas. Teachers are compared in terms of demographics and along dimensions linked to teacher quality (e.g., teacher certification).
Participation in Secondary Vocational Education: 1982-1987 (NCES 92-667)	1992	This Statistical Analysis Report describes participation in vocational education by public high school graduates in 1982 and 1987. It also examines how students' use of the academic curriculum relates to their use of the vocational curriculum.

provides an important source of supplemental information. For example, transcript studies provided key data for the last two NAVE reports to Congress, in 1989 and 1994. For the current NAVE, two upcoming DOVE reports examining trends in student participation are being developed in cooperation with NAVE staff to provide data for their 2002 report to Congress.

Improving the DOVE System

Since the initiation of the DOVE system in the 1980s, NCES has continuously worked to expand and improve the system. These improvement efforts include the convening of a Vocational Education Advisory Panel; the establishment of a Vocational Education Technical Review Panel (TRP) and a DOVE planning document; the development of a coordination system for working with OVAE; the adoption of a system for the review of survey instruments that feed into the DOVE system; and the establishment of a DOVE Web Site.

Vocational Education Advisory Panel

In 1997, NCES sponsored a 1-day meeting of representatives of U.S. Department of Education offices, national education associations, state education administrators, and independent researchers, all of whom were familiar with vocational education at the secondary, postsecondary, or adult education levels. This advisory panel was convened to advise NCES on the vocational education data that were most needed and on how NCES vocational education publications could be improved. This meeting proved so useful that it led to the creation of a permanent Vocational Education TRP.

Vocational Education Technical Review Panel

Drawing largely from the original Vocational Education Advisory Panel, the Vocational Education TRP was established in 1998 to *regularly* provide input on vocational education data collection and reporting needs. Working with our main DOVE contractor, the TRP provides advice on the content of survey instruments and on research and reporting priorities for vocational education. It is at the request of the Vocational Education TRP that the DOVE system is producing its first report on adult work-related education.

Planning document

To help guide the work of the Vocational Education TRP, NCES has supported the development of a written "planning document." This document outlines the key issues that should be addressed by the DOVE system, the data available to address these issues, timelines for the revision of DOVE data collection instruments and the release of new survey data, and a DOVE publications plan. The planning document is designed to be a "living document" that is continuously updated as data collections and research priorities evolve. Collectively, the information in the planning document allows for better planning and prioritizing of future DOVE activities.

Coordination with OVAE

The Department of Education's Office of Vocational and Adult Education also collects information on vocational education, both to monitor compliance with federal legislation and, through the research of the National Research Center for Career and Technical Education, to describe and improve program practice. To ensure that the DOVE system effectively complements OVAE's data collection efforts, an OVAE point-of-contact has been established. The DOVE coordinator and OVAE contact person regularly discuss data issues of mutual concern.

Survey instrument review

Most NCES survey studies have a TRP that provides input on survey development and survey administration issues. As part of the preparation for each survey administration, the relevant TRP meets to review the content of the survey instrument, sampling procedures, and other survey issues. The DOVE coordinator attempts to have formal or informal involvement in this TRP review process for all data collections within the DOVE system. It is through this process that the DOVE data collections can be modified to collect more reliable and complete data on vocational education.

DOVE Web Site

To help disseminate information *about* the DOVE system as well as information *from* the DOVE system, a DOVE Web Site[3] has been established within the NCES Web Site. The DOVE Web Site provides a brief overview of the purpose and structure of the DOVE system, lists the data collections in and reports from the DOVE system, and provides links to other sites with information on vocational education. The Web Site also includes the latest edition of the *DOVE*

[3]The DOVE Web Site is located at *http://nces.ed.gov/surveys/dove*

Update, a quarterly newsletter for Vocational Education TRP members.

Continuing Challenges

Since its first struggles with VEDS in the 1970s, NCES has made enormous strides in constructing a vocational education data collection and reporting system that meets the highest statistical standards. The success of this effort is reflected in the fact that federal legislation since 1984 has supported the DOVE system by continuing to authorize NCES to collect and report vocational education data from national sample surveys. Nonetheless, the DOVE system faces a number of continuing challenges. In the "Note From NCES" introducing this issue of the *Quarterly*, Val Plisko describes some of the more general challenges faced by DOVE because of its structure as a synthetic, or derived, data system. In this section, some of the challenges that arise from the unique nature of the vocational education system are noted.

First, vocational education is changing. Depending on where one looks, the changes may look more like an evolution or more like a revolution, but overall change is the norm. These changes reflect ongoing reforms and debate about the nature of vocational education—including who it should serve, its curriculum focus, even what it should be called (e.g., the former American Vocational Association is now called the Association for Career and Technical Education). It is difficult to determine both *what* should be measured in the DOVE system and *how* it should be measured, when knowledgeable people disagree on what vocational education is or should do. For example, not everyone agrees whether the new applied academics courses that are growing in popularity should be considered vocational or academic. The "career cluster" concept is changing notions about the value of depth versus breadth of preparation in secondary-level vocational education. There is also debate about the relative importance of the various goals that have been espoused for vocational education—such as providing students with general preparation for the labor market, providing students with job-specific skills, reducing high school dropout rates, preparing students for further education at the postsecondary level, and ensuring that disabled and disadvantaged students have equitable access to technical and work-related education. This debate also includes dissenting views on the extent to which vocational education programs should focus on *academic* skills and, by extension, the extent to which vocational education should be evaluated based on students' academic performance.

The process of change itself is also problematic for the DOVE system. While it is generally agreed that the changes and reforms occurring in vocational education are largely positive, monitoring a system in the midst of reform is like shooting at a moving target. It becomes particularly difficult to assess outcomes, since by the time we can measure the outcomes of today's vocational education system, the system that produced those outcomes will most likely no longer exist.

An additional problem arises from the absence of a clear and consistent high school vocational curriculum path. Because of this lack of a structured, definable program, it is unclear who should count as a vocational education participant or what it means to participate in the high school vocational education curriculum—particularly when 97 percent of all public school students take at least one vocational education course.

We employ a number of strategies to deal with these challenges. First, we attempt to reach consensus on what the DOVE system should measure by seeking input from the Vocational Education TRP, OVAE staff, and NAVE staff (when appropriate), as well as constituent feedback obtained at professional meetings, through the DOVE Web Site, or via each report's customer feedback form. Second, every attempt is made to use only the most recent data to describe the vocational education system and to report those data in a timely manner. The DOVE planning document is helpful in this regard, as it facilitates the scheduling of data analyses and reporting to coincide with new data releases. Third, we try to describe the vocational education system and its participants in a variety of ways that can provide more than one perspective on a given issue.

Defining student participation at the secondary level provides a good example of the use of multiple approaches to describing vocational education. In an upcoming report on this topic, we define participation in a variety of ways, reflecting different levels and types of involvement in the vocational curriculum. One measure simply counts the number of vocational education courses students take. Another measure counts the number of courses students take across all occupational preparation areas of the vocational curriculum (e.g., agriculture, business); students who take at least three such courses are called "vocational investors." At another level are "vocational concentrators," students who take at least three courses in any *single* occupational preparation area (e.g., three courses in agriculture). Other measures factor in advanced

coursetaking and work experience credits. We are also considering using vocational-academic curriculum linkages to describe participation in vocational education; for example, reporting the percentage of students who took a drafting course who also took a geometry course.

Although the uncertainties and debates in vocational education can make working on the DOVE system difficult, these problems also make working with DOVE quite interesting. As we strive to meet the challenges facing DOVE, we welcome feedback on both our progress in developing the DOVE system and our lack of progress. Meanwhile, we hope the DOVE system will continue to contribute to a greater awareness and understanding of the role of vocational education within the larger education system.

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Invited Commentary: Informing Policy on Vocational Education: Data Development for the Next Decade

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This commentary represents the opinions of the author and does not necessarily reflect the views of the National Center for Education Statistics.

Introduction

Accountability has become the watchword for education policy and will continue to dominate public discussion in the coming years. Vocational education has, in many respects, helped lead this new emphasis on results. The Carl D. Perkins Vocational and Technical Education Act of 1998, building on requirements for performance indicators and standards in earlier vocational education legislation, directed the states to develop systems of accountability incorporating four core indicators of student performance:

- student achievement, academic as well as technical;
- completion of coherent programs of technical and academic study and attainment of a high school diploma and postsecondary degrees and certificates;
- successful transition from secondary to postsecondary education and from education to the labor force; and
- equity, with respect to gender as well as special needs.

The legislation expects states to set performance targets on measures of each of these indicators and to demonstrate steady progress toward meeting these objectives. Failure to make headway triggers requirements for school improvement plans, as well as the possibility that federal funding will be withheld.

In principle, few would take issue with this attention to results. In the final analysis, what other justification can there be for sustaining particular programs of study and student support services if they do not produce observable gains in desired student outcomes? In practice, however, obtaining credible evidence of improved student performance has proven quite difficult. For a variety of reasons, by no means unique to vocational education, policy deliberations have lacked solid evidence on the impact of particular initiatives and the public dollars invested in them. Providing better information on what happens to students who participate in secondary and postsecondary vocational education is perhaps the greatest challenge facing the future development of national data to inform policy focused on this constellation of programs and services.

How can the National Center for Education Statistics (NCES) help address this challenge as it maintains and improves the Data on Vocational Education (DOVE) system, the primary system for generating credible national estimates on key aspects of secondary and postsecondary vocational education? This commentary suggests a possible agenda for data development over the next 5 to 10 years. It examines two major categories of information: (1) program outcomes, including student achievement and participation in further education and the labor force; and (2) program characteristics, including particular attributes of programs and services, as well as the demographics of participating students.

Program Outcomes: Measuring the Impact of Vocational Education

During the evolution of DOVE over the past 15 years, much has been accomplished. Today, as a result of well-designed transcript studies in both secondary and postsecondary education, we have much better information on who participates in the vocational curriculum, the kinds of courses and programs in which they enroll, how many credits or Carnegie units students accumulate in particular subjects, and the types of grades earned. Through longitudinal studies, we are better able to define and trace the different pathways students pursue through high school and postsecondary education as well as examine interactions between school and work. The National Postsecondary Student Aid Study (NPSAS) and its companion Beginning Postsecondary Students Longitudinal Study (BPS) tell us with high levels of precision who participates in postsecondary programs, what patterns of persistence and completion they follow, and how these estimates differ among different types of postsecondary education. With regard to both precision and detail, we know a great deal more about vocational education today than we did in the early 1980s, when the Vocational Education Data System (VEDS) came to an end.

Nevertheless, there is still much that we do not know. Most importantly, we do not yet have good information on what students learn from participating in vocational education, whether in technical courses alone or in combination with academics or other forms of learning such as youth apprenticeships or cooperative education. Additionally, while longitudinal studies have furnished better data on labor market participation by students taking vocational courses,

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one of the key labor market outcomes—earnings, immediately before and after participation in vocational education and over time—is not yet accurately or consistently measured. Finally, for a large and growing number of older adults using the postsecondary vocational education system for short-term skill upgrading, we know virtually nothing about learning gains or impacts on employment and earnings. In short, today we have much better information on who participates in vocational education but still know very little about what is accomplished as a result.

Better understanding the results of vocational education will require attention to improving the measurement of at least two kinds of outcomes: (1) learning gains and (2) labor force effects. On both fronts, there are challenging conceptual issues that need attention, in addition to definitional and methodological concerns.

Assessing learning gains

Traditionally, vocational education was expected to impart to students occupationally specific knowledge and skills that would enable them to secure entry-level employment, especially for those students entering the labor force immediately after high school. As vocational instruction assumed greater importance in community colleges, private proprietary schools, and other kinds of less-than-4-year postsecondary institutions, the technical rigor of vocational instruction increased. Nevertheless, vocational education was still intended primarily as preparation for work requiring less than a baccalaureate degree.

Although federal legislation still defines vocational education as having a subbaccalaureate focus, this limitation has gradually been disappearing in actual practice. With the increased necessity of having some postsecondary education to sustain employability and with the growing earnings gap between people who have a baccalaureate degree and lesser levels of postsecondary attainment, there is a growing consensus that vocational education should contribute to students' pursuit of the full range of postsecondary and employment options, not just entry-level or subbaccalaureate opportunities.

With this broadening of mission has also come an expansion of learning objectives. Thus, for the first time in its 80-year history, federal vocational education legislation in 1998 explicitly stressed that vocational education should contribute to students' mastery of *academics*, as well as technical knowledge and skills. Moreover, several of the fastest growing programmatic innovations in vocational education—career academies and tech-prep, for example—aim to offer students a comprehensive program of closely linked academic and technical studies, often spanning 2 to 4 years of secondary and postsecondary instruction.

That vocational education should help students learn and apply academic knowledge and skills seems beyond dispute. However, defining precisely what this means, determining how best to measure it, and assessing whether this expanded policy objective is being met are quite problematic.

Furthermore, it is not just assessing academic achievement that is difficult. Ironically, despite its longstanding emphasis on occupationally related knowledge and skills, vocational education lacks any widely accepted, rigorously validated assessments of students' technical achievement. Additionally, recent initiatives to expand work-related learning to include more generic proficiencies such as problem solving, understanding of systems, and the ability to work in teams have yet to produce credible assessment instruments. What then, are the prospects that national data will be able to speak to these aims in the near future?

Academic achievement. At the secondary level, participation in vocational education occurs mostly during grades 11 and 12 (although career academies and some tech-prep programs span 3 or 4 years of high school). Thus, if vocational education is to contribute to students' academic achievement, these effects are most likely to occur during the last 2 years of high school and are probably best measured by an assessment administered near the end of the 12th grade.

Although few states assess students' academic performance in the 12th grade, the National Assessment of Educational Progress (NAEP) does test a national sample of approximately 11,000 12th-graders. Future assessments of 12th-grade mathematics and science are slated for 2004 and 2008, with assessments of reading and writing scheduled for 2002, 2006, and 2010.

With respect to content, the NAEP assessments are reasonable indications of the kinds of academic knowledge and skills vocational education might be expected to reinforce. The mathematics assessment, for example, measures students' conceptual knowledge, procedural understanding, and problem-solving skills, as well as their abilities to reason, communicate, and make connections mathematically. However, as a primary tool for determining the contribution of vocational education to academic achievement, NAEP in its current design has two, possibly three, shortcomings.

First, NAEP is not designed to produce test scores for individual students; rather, it yields estimates for subpopulations. Consequently, analyzing relationships between particular patterns of vocational and academic coursetaking (using data from the transcript studies that accompany NAEP) and levels of academic achievement is methodologically challenging. This problem would be less daunting were it not for a second limitation of NAEP, sample size.

The absence of NAEP scores for individual students would be less problematic if it were possible to create usable subpopulations of students participating in secondary vocational education. However, the size of the national sample of 12th-graders (between 10,000 and 11,000 students) hampers most detailed analysis of patterns of participation in vocational education. Probably fewer than 2,000 of these 12th-graders have taken three or more units of vocational education in a specific program area. Even fewer have been part of a career academy or enrolled in tech-prep (conditions that presently cannot even be determined from NAEP data), making it very difficult to examine the achievement effects for students participating in such relatively new and emerging strategies for strengthening vocational instruction.

Finally, as good an indicator of academic achievement as NAEP is, it still may not be an adequate instrument for analyzing the contribution of vocational education to academic achievement. For one thing, it may not be calibrated finely enough to detect the influence of two or three units of vocational education on academic achievement. For another, it may not measure one of the most likely impacts of vocational education on academic achievement, namely, students' ability to apply selected academic concepts and skills to the kinds of problems or situations typically encountered in the world of work.

In sum, producing better measures in national surveys of vocational education's contribution to academic achievement will require at least two important actions. First, it will probably be necessary to improve the assessment instruments to better capture the potential impact of vocational education on academic achievement. Second, increasing the sample size of 12th-graders, either overall or by oversampling students who concentrate in vocational education generally or in particular programs, would make estimation easier and more precise.

Technical achievement. Regardless of NAEP's shortcomings, it nevertheless provides a rigorous basic foundation on which one might build better measures of vocational education's impact on academic achievement. Unfortunately, there is presently no comparable footing on which to construct an assessment of what vocational education contributes to students' attainment of technical knowledge and skills. On this score, there are several conceptual and methodological impediments.

Conceptually, there is a basic unanswered question: what to measure? Traditionally, formal assessment in vocational education has focused on students' mastery of occupationally specific competencies, as evidenced through either paper-and-pencil exams or actual performance demonstrations. The specification of competencies can be quite specific and formal as, for example, in the case of the knowledge and skills required of airframe and power mechanics as overseen by the Federal Aviation Administration. Alternatively, the definition of competencies and the expected levels of performance can be left entirely to the discretion of local instructors and their own development of particular assessment practices. As a result, what is measured varies widely, with little or no standardization or quality control, across vocational programs and the many secondary and postsecondary institutions offering instruction.

To help clarify the knowledge and skills expected of students pursuing occupational education and training and to develop a manageable system of voluntary industry skill standards, assessment, and certification, Congress in 1994 created the National Skill Standards Board (NSSB). NSSB is building a system organized around 15 major industries Work is nearing completion in two of these sectors, manufacturing and wholesale/retail, and is well under way in about six others. A fully developed system, however, is still many years away. It is possible, however, that as NSSB's work on individual sectors is finished, NSSB standards and assessment procedures could be incorporated into such national education data systems as NAEP, NPSAS, and the Education Longitudinal Study of 2002 (ELS:2002).

NSSB, by organizing its system around 15 industry sectors rather than the hundreds of occupationally specific job classifications that have been the focus of most other assessment and certification initiatives, may greatly simplify assessment of technical knowledge and skills. Nevertheless, direct assessment of student achievement in 15 different industries is likely to still be quite difficult to do in various national education surveys. Even if valid assessment and certification procedures are developed in each of these

sectors, it is by no means certain that they will rely mainly on the paper-and-pencil examinations that are the typical instruments of large-scale national assessments. Moreover, the mechanics of determining how to administer 15 different kinds of assessments would certainly be complicated.

Consequently, to include measures of technical achievement in national surveys it may be necessary to rely on more indirect strategies. If, for example, NSSB succeeds in designing solid assessments and if these become widely employed in secondary and postsecondary institutions, national surveys could concentrate on capturing student scores or evidence of competency-based program completion from administrative records. Similarly, national surveys might seek to retrieve information on certification of students in industries or occupations (e.g., nursing, automotive technicians, and aviation occupations) where certification through industry-developed systems or state certification requirements is becoming more rigorous and uniform throughout the country.

Finally, assessment of students' mastery of technical knowledge and skills will need to pay more attention to more generic outcomes such as the ability to manage resources, use information, comprehend systems, employ interpersonal skills, and understand technological principles and applications. Such proficiencies—representing the consensus of the Secretary's Commission on Achieving Necessary Skills (SCANS) on what is required to succeed in high-performance workplaces—are increasingly the focus of vocational and technical education in the nation's high schools and colleges. Nevertheless, there are not yet good instruments for assessing these new learning objectives.

Measuring labor market outcomes

As one would expect, a key aim of vocational education is improving students' prospects for sustained, rewarding employment. The current national surveys provide reasonably good data on such labor market outcomes as time to employment, type of employment (occupation or industry), and amount of time employed or unemployed. However, data on one essential indicator—earnings—leave much to be desired. All of the national surveys rely on respondents to self-report information on wages and salaries, and the resulting measures suffer with respect to accuracy, comparability, and consistency over time.

More direct and precise measures of earnings are difficult to obtain. One tempting strategy is to merge survey data with wage information from W-2 forms submitted to the Internal Revenue Service, but legitimate concerns about protecting the integrity of the income tax system have so far ruled out this option. An alternative being used by an increasing number of states interested in tracking employment and earnings of students is to merge student record information with data on employment and earnings from their unemployment insurance systems, which maintain accurate records of quarterly earnings by most workers.*

While merging national survey data with state unemployment insurance records would be logistically challenging, this approach is becoming more practical as more and more states gain experience with the technique. Sampling strategies that concentrated on particular states, for example, might yield much better earnings data. Alternatively, asking respondents to supplement self-reported earnings with paper documentation, such as a pay stub, might help improve the quality of this important measure.

Finally, it should be noted that for a rapidly growing population of participants in vocational education—older adults returning for skill upgrading and retraining—it is as important to have data on earnings immediately *prior* to enrollment as well as after completion. Measuring "value added" is the preferred methodology for understanding benefits to individuals who already have extensive labor force experience, and this cannot be done only with earnings information following program participation. Moreover, because this kind of participation is of much shorter duration than the degree and certificate programs typically pursued by younger students, more precise estimates of pre- and post-earnings are essential if the effects of vocational instruction are to be accurately evaluated.

Program Characteristics: Program Attributes and Participant Demographics

Although DOVE has greatly improved information on who is participating in vocational education and on what they are taking, there are some aspects of program definition and the attributes of participants that need attention as the design of future surveys proceeds. The delivery of vocational education is quite varied across the country, especially with the policy emphasis on new forms of academic and vocational integration and better articulation between secondary and postsecondary offerings. Similarly, participation is very diverse, with many different subpopulations of students taking vocational courses, often for very different

*Unemployment insurance systems typically exclude earnings by individuals who are self-employed, as well as some government employees.

reasons. Current surveys could do a better job of capturing these distinctions.

With respect to better distinguishing the types of vocational program offerings, surveys must make a better effort to identify tech-prep programs and career academies. Tech-prep programs—comprehensive programs of academic and technical study spanning the last 2 years of high school and the first 2 years of postsecondary education—have been a priority of federal policy since the mid-1980s, but national surveys do not distinguish these offerings from other types of vocational education.

Similarly, career academies are one of the fastest growing new forms of integrated academic and technical instruction in high schools throughout the country. A recent rigorous evaluation of career academies by the Manpower Demonstration Research Corporation (Kemple and Snipes 2000), employing experimental design, concluded that these programs are having significant benefits, especially for at-risk students, with respect to attendance, grades, and high school completion. National data on vocational education should track participation in career academies and monitor outcomes associated with participation. Better determination of students' participation in various forms of work-based learning—such as youth apprenticeships, cooperative education, and internships—would also be helpful.

Regarding the types of students participating in vocational education, better information on certain subpopulations would be helpful. Congress has long been concerned about benefits to students with a wide range of special needs. Some of these populations are relatively small and, therefore, often are not well represented in the samples used for national surveys. More attention to oversampling certain subpopulations or other strategies for improving representation would be helpful. Among the subpopulations to be considered for more substantial inclusion are students enrolled in special education and students with limited English proficiency.

Conclusion

During the past 2 decades, NCES has achieved considerable improvement in the accuracy, comparability, and consistency of data on vocational education and on vocational education's relationship to the larger secondary and postsecondary enterprise in which it operates. Most significantly, basic questions about who participates in vocational education and what they take can be answered with confidence, and good trend data over the past 15 to 20 years are now taken for granted.

The challenge for the next decade is to better understand what participation in vocational education means. How does it contribute to students' mastery of academic and technical knowledge? What effects does it have on opportunities to pursue further education and participate successfully in the labor force? On this score, much remains to be done.

Because DOVE is an "integrated" data system, relying on a variety of different surveys, none of which has as its primary purpose collecting information about vocational education, it is difficult to systematically modify and maintain a comprehensive, up-to-date plan for collecting national data on vocational education. As DOVE approaches its 20th year of operation, it is perhaps time for a major concentrated review. The top priority for such an examination should be ambitious, but realistic efforts to define and measure the learning gains and employment outcomes of vocational education participants in national surveys. Successfully addressing this objective will help ensure that national policy on vocational education will be well informed in the years ahead.

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Invited Commentary: The Role of DOVE in Policy Decisionmaking

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This commentary represents the opinions of the author and does not necessarily reflect the views of the National Center for Education Statistics.

Introduction

Never have high-quality data been more important to developing sound policies. A new era of accountability has been ushered in that may well affect how education programs are conceived, funded, implemented, and refined or eliminated. In states and districts, for example, academic assessments, rates of postsecondary transitions, and the availability of Advanced Placement courses are increasingly becoming important indicators of program and school success, with rewards, targeted technical assistance, or even reconstitution as possible consequences. Federal agencies are also subject to performance accountability, under the Government Performance and Results Act (GPRA), enacted in 1993. Federal programs must collect data and report to Congress annually on progress toward and achievement of clearly defined goals and objectives. In theory, programs that fail to make sufficient progress could lose their authorization or appropriations.

Vocational education, in particular, is now being held to a new standard of accountability for results. Recent federal legislation supporting vocational education—the 1998 reauthorization of the Carl D. Perkins Vocational and Technical Education Act (Perkins III)—eliminated the previous law's set-aside funding streams for special populations in favor of greater flexibility to state and local programs. In return, however, Congress raised the requirements for state reporting of student outcome data and the potential rewards and penalties for states that can and cannot do so.

While only time will tell whether efforts to judge programs by their performance will lead to improvements in educational quality, there is little question that information collections like the Data on Vocational Education (DOVE) system could play an increasingly critical role. It is therefore important that the National Center for Education Statistics (NCES) carefully plan out how it can meet both research and policy needs regarding vocational education in the future.

Current Policy Issues in Vocational Education

Vocational education is a field in transition, prompted by sweeping changes in state and local education priorities. School reform and the Workforce Investment Act of 1998 (WIA) loom as forces shaping vocational education. New goals, program offerings, and terminology increasingly characterize the field. Federal legislation has encouraged several major changes at the secondary level—from a historic emphasis on entry-level job preparation in semi-skilled occupations to a broader focus on preparation for careers that offer high wages and require higher level skills; from preparing students to enter the workforce directly after high school to providing students with the choice of pursuing employment or attending college (or as is increasingly the case, doing both simultaneously); and from expecting vocational students to do less well in school than other students to holding such students to the same academic standards as others.

Several key issues frame what policymakers and practitioners need to know about vocational education.

Who participates in vocational education? How do these experiences contribute to improved academic and occupational skills, postsecondary educational attainment, and earnings?

Perhaps the most important concern for vocational education is who participates at the secondary level and how well they fare in school and beyond. Evidence from the early 1990s suggested that enrollments in vocational education were declining, vocational programs had come to be stigmatized as a "track" for less successful students, and participation appeared to contribute little "valued added" to outcomes for most students (Boesel and McFarland 1994). Over the last 5 years, however, there have been efforts to target new initiatives to students other than those traditionally served and to strengthen vocational courses and programs (Hershey et al. 1998). Whether any of these efforts have successfully broadened the appeal and improved the impact of career programs needs careful examination.

In contrast to vocational education at the secondary level, occupational program enrollments at the postsecondary level appear to be growing. However, available evidence clearly establishes a shift toward enrollment of older students with diverse education and training objectives (Levesque et al. 2000). These enrollment trends, and their impact on the value of an associate's degree or certificate, may signal a changing role for occupational education at the postsecondary level.

To what extent are the improvement strategies promoted in federal legislation reflected in school practice and proven effective in raising student outcomes?

For nearly a decade, federal policy has attempted to improve the quality of secondary vocational programs by strengthening the connection between vocational education and mainstream educational objectives at the high school level. These vocational improvements are intended to keep pace with and complement other reform efforts in high schools. Several strategies have been emphasized: integrating academic and vocational education, linking secondary and postsecondary vocational programs, and broadening vocational curriculum beyond its traditional emphasis on entry-level job preparation. Some of these strategies are embedded in particular, recognized programs such as tech-prep, career academies, and High Schools That Work. Now that these reforms have been promoted for some time, it is important to examine whether they have found their way into school offerings and teaching approaches, and if there is evidence on how well these programs and practices work.

What is the impact of school reform efforts on vocational education at the secondary level and the WIA at the postsecondary level? How well aligned are these various initiatives?

States and local districts have been raising the academic coursework and skills required for graduation, making high academic achievement the paramount marker of a school's success. While other measures of school performance are also important (e.g., placement into higher education or career-oriented employment, reductions in dropout rates, technical competency), efforts to increase academic attainment are likely to continue as a focus for school improvement. A major policy issue facing vocational education, then, is how it can support this central mission for high schools.

A key concern at the postsecondary level is coordinating occupational programs with the workforce development system. When Congress enacted Perkins III and the WIA, it was believed that a plethora of job training programs created excessive administrative burden upon states and discouraged access to services. Policymakers are interested in whether the relationship between Perkins and the WIA has streamlined, or whether it is likely to streamline, the system.

Is the policy shift from set-asides and legislative prescription to flexibility and accountability likely to improve vocational program quality and student outcomes? How do special populations fare?

For the past 2 decades, federal policy has focused on serving those most at risk, commonly termed "special populations." Perkins III represents a major shift in direction, eliminating special funding streams and other requirements and replacing them with a mandate that states report on the progress of special population groups. Key concerns include whether (1) increased flexibility has resulted in changes in education priorities or practices, (2) at-risk populations have been helped or hurt as a result, and (3) accountability requirements are improving the quality of vocational education for all students.

DOVE's Contributions to Policy Analysis

In what ways does DOVE help inform policies and programs? Not all of the information needed for policymakers and practitioners is well suited to the types of data collection and analysis that NCES does best. DOVE's strength as a policy resource lies mainly in two areas.

First, DOVE provides critical information on national trends in enrollment and coursetaking. A series of recent NCES reports has shown declining participation in vocational education, at least in part a response to increased enrollment in academic courses. This has triggered important policy discussion around the future role of vocational education in the era of academic education reforms. These reports have also highlighted the problem of less rigorous academic coursetaking among vocational students, which contributed to policymakers' decision to include a measure of academic attainment in the Perkins accountability provisions.

Second, DOVE draws upon longitudinal data collections that allow rigorous analysis of impacts. NCES surveys such as High School and Beyond (HS&B), the National Education Longitudinal Study of 1988 Eighth-Graders (NELS:1988), and the future Education Longitudinal Study of 2002 (ELS:2002) offer the most representative and comprehensive databases on high school experiences and their outcomes. No other large-scale data collections, for

instance, include academic assessments in the 12th grade, which enable researchers to test whether vocational education contributes to academic achievement—a key policy question. Because these surveys track students into college (including postsecondary occupational programs) and the labor market, we can evaluate the value added of vocational education to postsecondary transitions and, eventually, to earnings. In a time when federally and state-funded programs are increasingly required to prove their effectiveness, these data and analyses are crucial. At the federal level, they will serve as an important check on the validity of Perkins accountability reporting by the states.

Enhancing DOVE's Capacity

As DOVE continues to evolve, however, its contribution to research and policy analysis could be enhanced in several ways. Most importantly, it must keep up with the ways in which vocational education is changing, as noted also by Lisa Hudson in the featured article for this issue of the *Quarterly*. DOVE need not resolve policymakers' lack of consensus over vocational education's objectives or preferred delivery approaches, but it should adjust its data collection to allow measurement of the array of alternatives.

For example, participation is no longer defined solely by a predetermined number of related occupational courses, but also by the manner in which these courses are linked to academics through strategies such as tech-prep or career academies. Since the nature of these linkages is often impossible to identify through transcript studies, NCES is going to have to find careful ways to ask about programs and practices that are now firmly embedded in the lexicon of vocational education reform. Are these strategies prevalent? Which kinds of schools offer these programs and which students are exposed to them? Are the strategies effective and worth promoting? It is reasonable to dedicate some effort to collecting the basic information that will allow researchers to address these questions, given that 16 percent of high school credits, on average, are earned in vocational education.

NCES may also want to consider broadening the populations included in particular surveys to address a wider range of vocational and general education policy issues. For example, ELS:2002, the major new high school study that NCES is about to undertake, begins with a representative sample of students chosen in the spring of their 10th-grade year. Yet many of the fundamental policy questions—for example, what kinds of instructional approaches or programs (including vocational education) help lay the foundation for success—require data on students' skills and experiences early in high school. At the postsecondary level, the data sources on which DOVE relies most—the National Postsecondary Student Aid Study (NPSAS) and the Beginning Postsecondary Students Longitudinal Study (BPS)—fail to adequately capture a rapidly expanding segment of the college market: individuals who take occupational courses with the intention of pursuing industry certification, but not necessarily a formal college credential (e.g., in information technology fields). Those surveys also ignore the alternative delivery systems in many states that account for a large share of postsecondary occupational enrollments.

Conclusions

The DOVE system has established itself as an important source of policy information on vocational education. However, its future direction will need to accommodate changes in the field if DOVE is to stay useful and relevant. This will mean, above all, urging NCES to include in its surveys questions about programs and practices that lie at the heart of vocational education reforms. These surveys should have samples of schools, students, and teachers that are large enough to allow conclusions to be drawn about the impacts of those reforms.

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Elementary and Secondary Education

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The Kindergarten Year: Findings From the Early Childhood Longitudinal Study, Kindergarten Class of 1998–99

Jerry West, Kristin Denton, and Lizabeth M. Reaney

This article was originally published as the Executive Summary of the Statistical Analysis Report of the same name. The sample survey data are from the NCES Early Childhood Longitudinal Study, Kindergarten Class of 1998–99 (ECLS-K).

The kindergarten year marks a period of rapid change in the ways children think about themselves and the world around them (Bredekamp and Copple 1997; Sameroff and McDonough 1994). This change is influenced by both developmental factors (e.g., age, maturation) and environmental factors (e.g., schooling, home educational activities, family resources). Across this first year of schooling, children will acquire the knowledge and skills that will prove integral to their future success in school and in life.

Children enter school demonstrating a vast array of knowledge and skills, with some children further along than others (West, Denton, and Germino Hausken 2000). The kindergarten year serves multiple purposes and is geared toward the development of both cognitive and noncognitive knowledge and skills (Seefeldt 1990). And, depending on the child, knowledge and skills develop in different areas and at different rates across this year of school.

To enrich the picture of children's first experience in formal education—the kindergarten year—we need to understand the knowledge and skills children possess as they enter kindergarten and we need to gain insight into how these develop across the kindergarten year. This report attempts to answer two basic sets of questions about children's knowledge and skill acquisition during the kindergarten year:

1. What gains are children making from the fall of their kindergarten year to the spring of their kindergarten year in their overall reading and mathematics knowledge and skills? Do these gains differ by child, family, and kindergarten program characteristics

(e.g., age, family risk factors, full- or part-day program)? As children are exiting kindergarten and preparing for first grade, how do their knowledge and skills differ by child, family, and kindergarten program characteristics?

2. What gains are children making in specific knowledge and skills (e.g., recognizing letters, recognizing numbers, paying attention)? Do children's gains in specific knowledge and skills differ by child, family, and kindergarten program characteristics? At the end of their kindergarten year when children are preparing for first grade, do their specific knowledge and skills differ by child, family, and kindergarten program characteristics?

The findings in this report come from the Early Childhood Longitudinal Study, Kindergarten Class of 1998–99 (ECLS-K). ECLS-K, sponsored by the U.S. Department of Education, National Center for Education Statistics (NCES), selected a nationally representative sample of kindergartners in the fall of 1998 and is following these children through the end of fifth grade. The full ECLS-K sample comprises approximately 22,000 children who attended about 1,000 kindergarten programs during the 1998–99 school year. The children attended both public (85 percent) and private (15 percent) kindergartens that offered full-day (55 percent) and part-day (45 percent) programs. All kindergarten children within the sampled schools were eligible for the sampling process, including language minority and special education students. The sample includes children from different racial/ethnic and socioeconomic backgrounds. In the fall of 1998, about 95 percent of kindergartners were entering school for the first time. This report focuses on these first-time kindergartners. When information on children's cognitive knowledge and skills is presented, this report focuses on the children in the sample who received the cognitive assessment in English in both the fall and the spring of their kindergarten year.[1]

Findings

Question 1. Children's overall reading and mathematics knowledge and skills: Gain, differences in gain, and spring kindergarten status

To address the first set of questions, the change from the fall of kindergarten to the spring of kindergarten in children's reading and mathematics scale scores was examined. These scores reflect children's overall performance in these domains. The possibility that particular groups of children might demonstrate more or less gain over the kindergarten year was also explored (e.g., children at risk for later school difficulty might not acquire reading knowledge and skills at the same rate as children not at risk for later school difficulty).

As their kindergarten year comes to a close, children demonstrate higher levels of reading and mathematics knowledge and skills than they demonstrated as they entered school for the first time. Children's reading scale scores increased by 10 points across the kindergarten year (figure A). Therefore, the gain from fall to spring is about one standard deviation (an appreciable increase).[2] Children's mathematics scores increased by eight points from the fall to the spring (figure B). Thus, children's mathematics knowledge and skills also increased about one standard deviation during the kindergarten year.

For the most part, the gains children demonstrate in their overall reading and mathematics knowledge and skills do not differ markedly by child, family, and kindergarten program characteristics. For example, there is not more than a two-point difference in the gains children demonstrated in reading and mathematics by mother's education. The absence of a substantial differential gain in children's overall reading and mathematics knowledge and skills is seen again when we consider other characteristics of children, their families, and their kindergarten programs, such as children's age as they enter school and family risks

[1] Approximately 30 percent of Hispanic children and 19 percent of Asian children were not assessed in English and are not included in the estimates related to cognitive knowledge and skills. The Hispanic children who were proficient in Spanish were assessed in Spanish (for details, see the methodology section of the full report). The Hispanic and Asian children not assessed in English are included in the estimates related to noncognitive knowledge and skills. And, due to specific instructions listed in the child's school record, about 0.5 percent of all kindergartners were excluded from the cognitive assessment based on a disability.

[2] A standard deviation provides information on the spread of the distribution of scores. In a normal distribution, approximately 68 percent of scores fall within plus or minus one standard deviation of the mean, and approximately 95 percent fall within plus or minus two standard deviations of the mean. Following are the means (after the dashes) and the standard deviations (in parentheses) for children's overall reading and mathematics performance in this report: fall reading—22 (8), fall mathematics—20 (7), spring reading—32 (10), spring mathematics—28 (9), change in reading—10 (6), and change in mathematics—8 (5).

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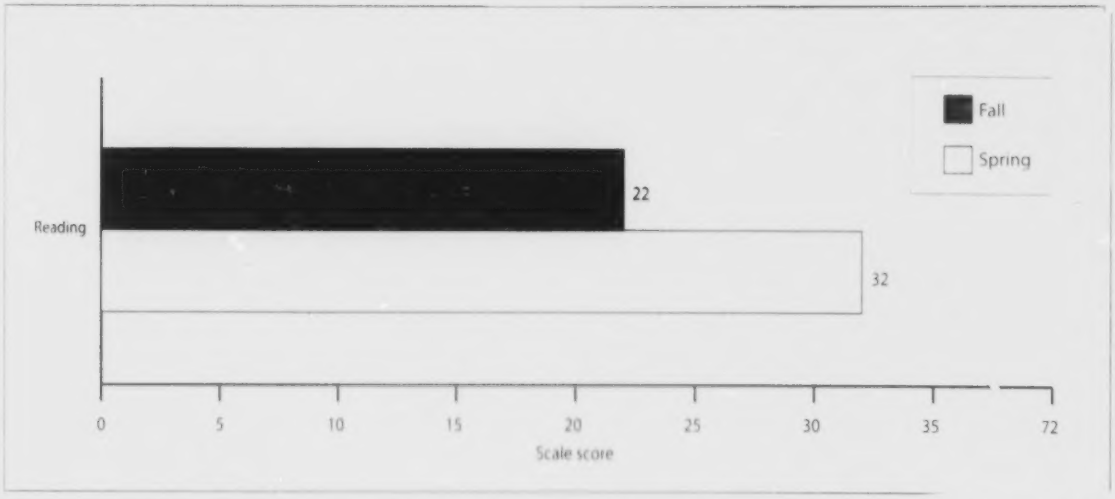
Figure A.—First-time kindergartners' mean reading scale scores: Fall 1998 and spring 1999



NOTE: The ECLS-K assessment was designed for both kindergarten and first-grade children. Therefore, a mean score of approximately 30 (out of a possible 72 points) in the spring of kindergarten is not unexpected.

SOURCE: U.S. Department of Education, National Center for Education Statistics, Early Childhood Longitudinal Study, Kindergarten Class of 1998–99 (ECLS-K), fall 1998 and spring 1999.

for later school difficulty. The same is true when we look at school type and kindergarten program type. However, when we consider the specific knowledge and skills children are acquiring (e.g., letter recognition, addition and subtraction, making friends, paying attention), children are developing particular cognitive and noncognitive knowledge and skills at different rates.

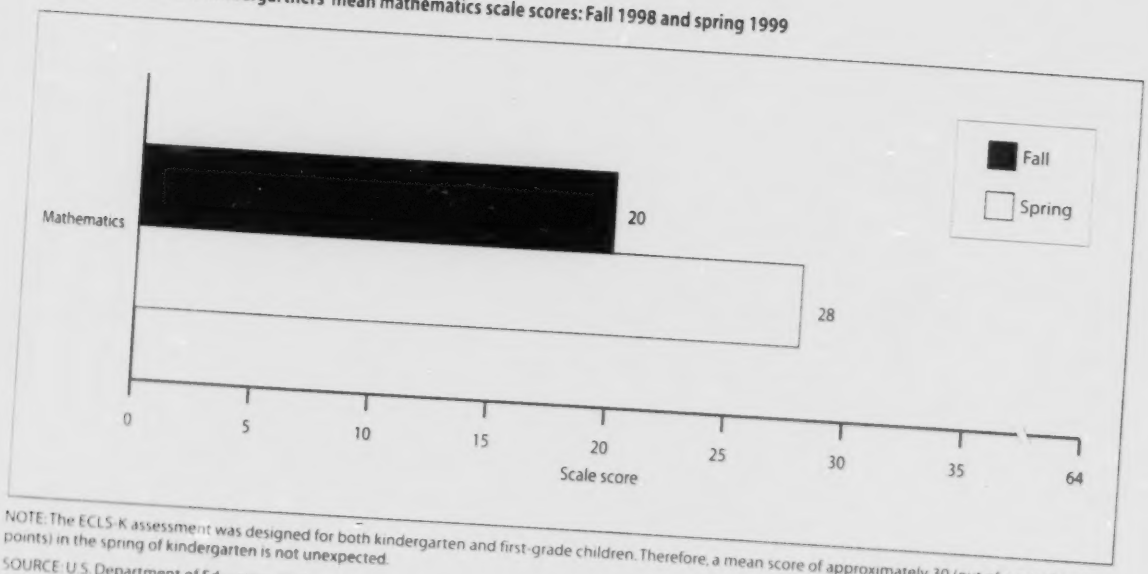
Question 2. Children's specific knowledge and skills: Gain, differences in gain, and spring kindergarten status

To address the second set of questions, changes in children's specific cognitive and noncognitive knowledge and skills were examined. Furthermore, the question of whether certain groups of children were more likely than others to acquire specific cognitive and noncognitive knowledge and skills was explored (e.g., does the probability that children acquire the reading skill of sight-word recognition vary by the level of their mother's education?). Finally, information is presented on the specific knowledge and skills children demonstrate in the spring of their kindergarten year as they are preparing for first grade.

In addition to the overall reading and mathematics scale scores, the ECLS-K assessment battery provides information on specific proficiencies. In the reading domain, the ECLS-K assessment battery provides information on letter recognition; understanding of the letter-sound relationship at the beginning of words; understanding of the letter-sound relationship at the ending of words; sight-word recognition; and understanding of words in context. In the mathematics domain, the ECLS-K assessment battery provides information on recognizing single-digit numbers and basic shapes; counting beyond 10, recognizing the sequence in basic patterns, and comparing the relative size (dimensional relationship) of objects; recognizing two-digit numbers, identifying the next number in a sequence, and identifying the ordinal position of an object; performing simple addition and subtraction; and performing basic multiplication and division.

Across the kindergarten year, children acquire specific knowledge and skills in reading and mathematics (figures C and D). By the end of their kindergarten year, nearly all children recognized their letters as well as their numbers and shapes. The percentage of children able to recognize words by sight and demonstrate an understanding of words in context, though still relatively low, increased from kindergarten entry to kindergarten exit. And the numbers of children adding and subtracting also increased from kindergarten entry to kindergarten exit. We see less dramatic changes in children's social skills and approaches to learning across the kindergarten year, with a large percentage of children exhibiting prosocial behaviors and positive approaches to learning throughout the year.

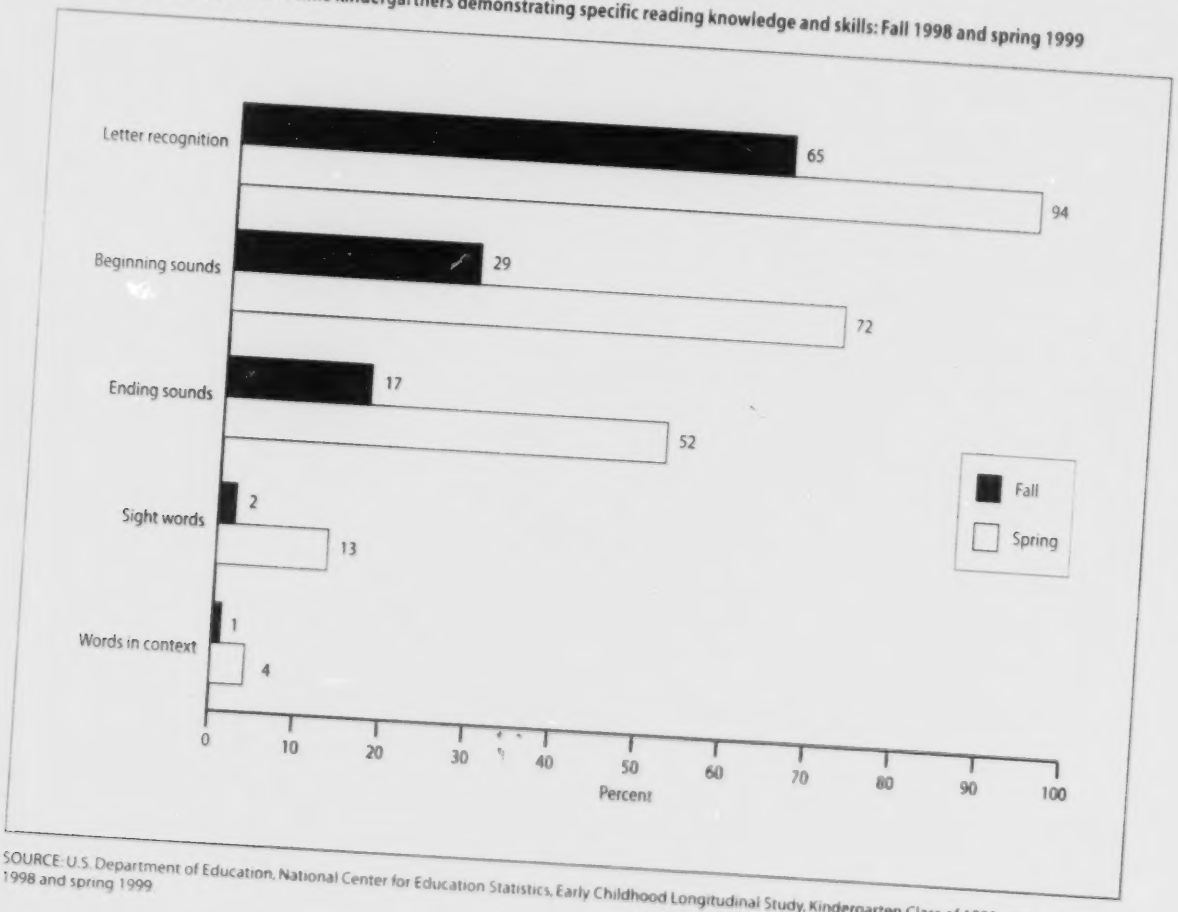
Figure B.—First-time kindergartners' mean mathematics scale scores: Fall 1998 and spring 1999



NOTE: The ECLS-K assessment was designed for both kindergarten and first-grade children. Therefore, a mean score of approximately 30 (out of a possible 64 points) in the spring of kindergarten is not unexpected.

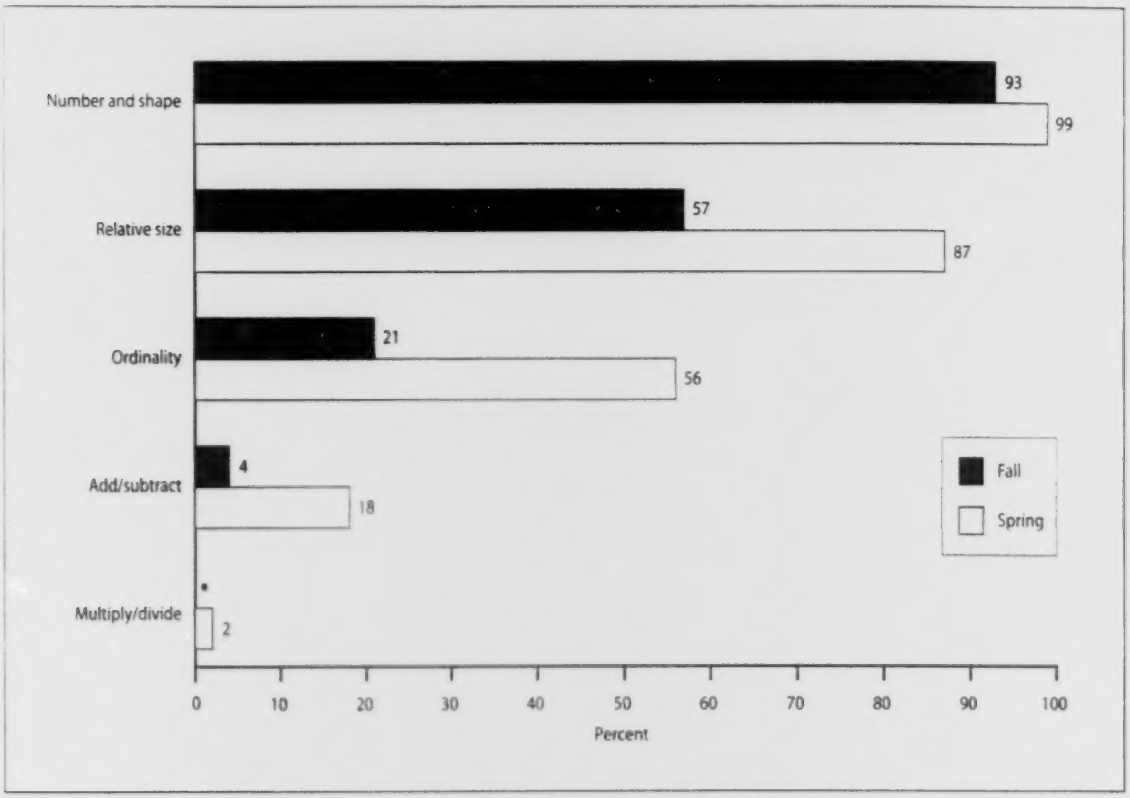
SOURCE: U.S. Department of Education, National Center for Education Statistics, Early Childhood Longitudinal Study, Kindergarten Class of 1998–99 (ECLS-K), fall 1998 and spring 1999.

Figure C.—Percentage of first-time kindergartners demonstrating specific reading knowledge and skills: Fall 1998 and spring 1999



SOURCE: U.S. Department of Education, National Center for Education Statistics, Early Childhood Longitudinal Study, Kindergarten Class of 1998–99 (ECLS-K), fall 1998 and spring 1999.

Figure D.—Percentage of first-time kindergartners demonstrating specific mathematics knowledge and skills: Fall 1998 and spring 1999



*Less than 0.5 percent of beginning kindergartners were able to perform basic multiplication and division in fall 1998.

SOURCE: U.S. Department of Education, National Center for Education Statistics, Early Childhood Longitudinal Study, Kindergarten Class of 1998–99 (ECLS-K), fall 1998 and spring 1999.

When we examined children's overall gains in reading and mathematics knowledge and skills (as measured by their reading and mathematics scale scores) by child, family, and kindergarten program characteristics, we found little evidence of differential gains from fall to spring. Based on those findings, the conclusion might be that from the fall to the spring of kindergarten, all children are acquiring knowledge and skills at approximately the same rate, and that they are learning the same things. However, this is not completely accurate. We see a very different picture when we look at children's acquisition of specific knowledge and skills.

To illustrate, children from the more disadvantaged backgrounds (those with at least one family risk factor) are closing the gaps in basic skills (i.e., recognizing their letters and counting beyond 10, recognizing the sequence in basic patterns, and comparing the relative size of objects). However, these same children lag further behind their more advantaged classmates when it comes to gaining more sophisticated reading and mathematics knowledge and skills (i.e., recognizing words by sight or solving simple addition and subtraction problems). In fact, the gap has widened. The same basic patterns we see when we consider cumulative family risk factors are present when we consider other child characteristics, such as race/ethnicity.

Furthermore, we see some evidence of differential gain in the frequency with which children demonstrate specific social skills. To illustrate, according to their teachers, younger children are more likely than their older counterparts to acquire the skill of paying attention during the kindergarten year.

As children were completing kindergarten and preparing for first grade, almost all children (94 percent) knew their letters, and 72 percent understood the letter-sound relationship at the beginning of words, while 52 percent

understood the letter-sound relationship at the ending of words. In fact, 13 percent demonstrated a proficient understanding of words by sight, and 4 percent demonstrated a proficient understanding of words in context (figure C). In mathematics, 99 percent of children recognized their numbers and basic shapes, and the majority (87 percent) demonstrated understanding of dimensional relationships among objects (relative size). Just over half (56 percent) of children demonstrated an understanding of the mathematical concept of ordinality. Moreover, 18 percent showed they can add and subtract, and 2 percent were successfully performing multiplication and division (figure D).

Summary

Young children need knowledge and new experiences to develop and thrive. Schools offer a plethora of learning and development opportunities for children. Consequently, it is not surprising that across the kindergarten year children are rapidly acquiring the knowledge and skills integral to succeed in school and life.

This report presents a simple picture of the gains children make across the kindergarten year. ECLS-K will follow these children through the fifth grade. We will be able to track children's performance and the differences in their performance, not only by child and family characteristics, but also by teacher and school characteristics. This report represents only the beginning of understanding the role of the kindergarten year in children's development. Future analyses, based on the information from ECLS-K, will help us understand the role of such things as child care, home educational environment, teachers' instructional practices, class size, and the general climate, facilities, and safety of the schools.

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Data source: The NCES Early Childhood Longitudinal Study, Kindergarten Class of 1998–99 (ECLS-K), fall 1998 and spring 1999.

For technical information, see the complete report:

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To obtain the complete report (NCES 2001–023), call the toll-free ED Pubs number (877–433–7827), visit the NCES Web Site *(http://nces.ed.gov)*, or contact GPO (202–512–1800).

NAEP 1999 Trends in Academic Progress: Three Decades of Student Performance

Jay R. Campbell, Catherine M. Hombo, and John Mazzeo

This article was originally published as the Executive Summary of the report of the same name. The sample survey data are from the National Assessment of Educational Progress (NAEP) 1999 Long-Term Trend Assessment.

Amid the social, political, and technological changes of the last 30 years, interest in the education of America's children has remained high. During the 1970s and 1980s, concern for educational achievement prompted a "back to basics" movement followed by a call for learning expectations beyond minimum competency. In the 1990s, the desire that all students attain high levels of academic achievement was expressed through the establishment of challenging national education goals and state academic standards.

Against this backdrop, the National Assessment of Educational Progress (NAEP) has served as the nation's only ongoing monitor of student achievement across time. As a project of the National Center for Education Statistics (NCES) of the U.S. Department of Education, NAEP has regularly administered assessments in a variety of subject areas to nationally representative samples of students since 1969. Among the many components of the NAEP program, the long-term trend assessments have provided a gauge of student achievement over time by administering the same assessments periodically across NAEP's 30-year history.

In 1999, the long-term trend assessments in reading, mathematics, and science were administered for the final time in the 20th century. This report presents the results of those assessments and examines the trends in 9-, 13-, and 17-year-olds' achievement in these three subjects since the first administration of each assessment. A long-term trend writing assessment was also administered in 1999; however, the results of that assessment are undergoing evaluation.

This report provides an overview of major findings from 10 administrations of the long-term trend reading assessment since 1971, 9 administrations of the long-term trend mathematics assessment since 1973, and 10 administrations of the long-term trend science assessment (since 1970 for 9- and 13-year-olds, and since 1969 for 17-year-olds). It should be noted that these long-term trend assessments are different from more recently developed assessments in the same subjects that make up NAEP's "main" assessment program. Because the instruments and methodologies of the two assessment programs are different, comparisons between the long-term trend results presented in this report and the main assessment results presented in other NAEP reports are not possible.

National Trends in Reading, Mathematics, and Science Achievement

Generally, the trends in mathematics and science are characterized by declines in the 1970s, followed by increases during the 1980s and early 1990s, and mostly stable performance since then. Some gains are also evident in reading, but they are modest. Overall improvement across the assessment years is most evident in mathematics. National trends in average reading, mathematics, and science scores are depicted in figure 1.

Reading scores

17-year-olds. Average scores from 1984 to 1992 were higher than in 1971. The slight increase between 1971 and 1999, however, was not statistically significant.

13-year-olds. Average scores increased during the 1970s. Since 1980 scores have fluctuated; however, the average score in 1999 was higher than that in 1971.

9-year-olds. Average scores increased during the 1970s. Since 1980 there has been no further improvement in scores; however, the average score in 1999 was higher than that in 1971.

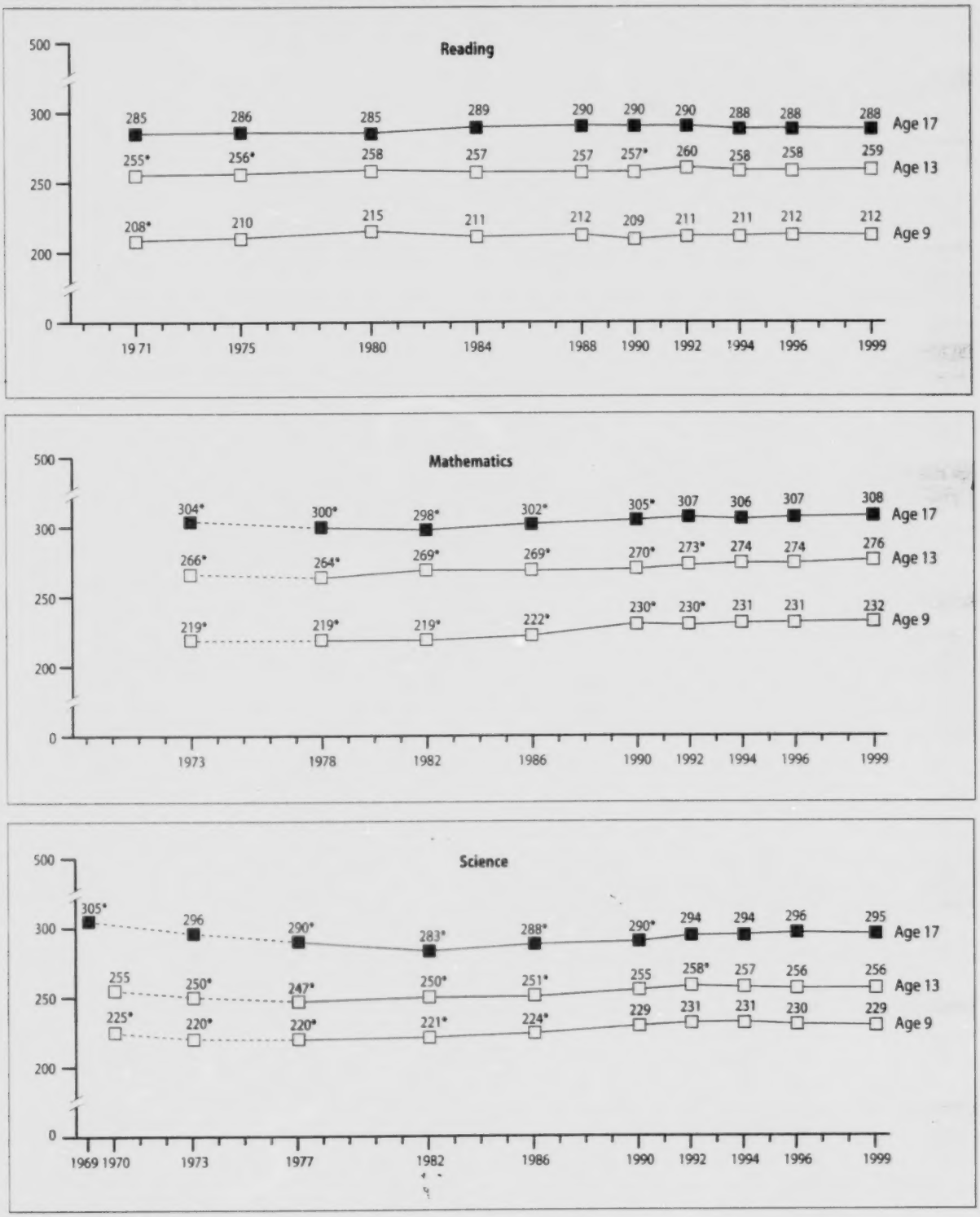
Mathematics scores

17-year-olds. After declining between 1973 and 1982, average scores increased during the 1980s, and more modestly in the 1990s. The average score in 1999 was higher than that in 1973.

13-year-olds. An increase in scores between 1978 and 1982, followed by additional increases in the 1990s, resulted in an average score in 1999 that was higher than that in 1973.

9-year-olds. After a period of stable performance in the 1970s, average scores increased in the 1980s. Additional modest gains were evident in the 1990s, and the 1999 average score was higher than that in 1973.

Figure 1.—Trends in average scale scores for the nation in reading, mathematics, and science



*Significantly different from 1999.

NOTE: Dashed lines represent extrapolated data.

SOURCE: U.S. Department of Education, National Center for Education Statistics, National Assessment of Educational Progress (NAEP), 1999 Long-Term Trend Assessment.

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Science scores

17-year-olds. After declining between 1969 and 1982, average scores increased until 1992. Although the average score in 1999 was higher than those from 1977 through 1990, it remained lower than the average score in 1969.

13-year-olds. After declining between 1970 and 1977, average scores increased until 1992. A slight decline since 1992, however, resulted in an average score in 1999 that was similar to that in 1970.

9-year-olds. After declining between 1970 and 1973, average scores remained relatively stable until 1982. Increases between 1982 and 1990, followed by relatively stable performance in the 1990s, resulted in an average score in 1999 that was higher than that in 1970.

Trends in Average Scores by Quartiles

Examining student performance within different ranges of the score distribution provides some indication of whether or not overall trends in average scores are reflected in trends for lower, middle-, or higher performing students. The summary of results presented here examines trends in the scores attained by students in the lower quartile (lower 25 percent), middle two quartiles (middle 50 percent), and upper quartile (upper 25 percent) of the score distribution. Quartile results are available back to 1971 for reading, 1978 for mathematics, and 1977 for science.

Reading quartiles

Among 9-year-olds, the average reading scores of students in each quartile range in 1999 were higher than in 1971. Among 13-year-olds, overall gains are evident mostly for students in the upper quartile and, to a lesser extent, in the middle two quartiles. Among 17-year-olds, overall improvement is evident only among students in the lower quartile.

Mathematics quartiles

The overall gains that were seen for each age group in the national average mathematics scores are also evident in each quartile range. For 9-, 13-, and 17-year-olds, the 1999 average score in each quartile range was higher than in 1978.

Science quartiles

Among 9- and 13-year-olds, overall gains in science since 1977 are evident in each quartile range. Among 17-year-olds, scores increased between 1977 and 1999 in the upper and middle two quartiles, but not in the lower quartile.

Trends in Average Scores for Racial/Ethnic Subgroups

The racial/ethnic subgroups measured in this assessment were white, black, and Hispanic students. Other racial/ethnic subgroups are not reported, as the samples collected were of insufficient size to analyze and report separately. Results for Hispanic students are not available for the first assessment year in reading (1971) and for the first 2 assessment years in science (1969/1970 and 1973).

Reading scores by race/ethnicity

Among white students, gains in average reading scores are mostly evident across the assessment years for 9- and 13-year-olds. Among black and Hispanic students, overall gains are evident at each age.

In 1999, white students had higher average reading scores than their black and Hispanic peers. The gap between white and black students in reading narrowed between 1971 and 1999 in each age group. Since 1988 it has widened somewhat at ages 13 and 17. The gap between white and Hispanic students narrowed between 1975 and 1999 at age 17 only.

Mathematics scores by race/ethnicity

Students in each racial/ethnic group and at all three ages showed gains in mathematics scores across the assessment years.

In 1999, white students had higher average mathematics scores than their black and Hispanic peers. The gap between white and black students in mathematics narrowed between 1973 and 1999 in each age group. Some widening is evident since 1986 at age 13, and since 1990 at age 17. The gap between white and Hispanic 13- and 17-year-olds narrowed between 1973 and 1999, but has widened since 1982 among 9-year-olds.

Science scores by race/ethnicity

Among white and black students, overall gains in science are evident for 9- and 13-year-olds. Hispanic students at each age show overall gains across the assessment years.

In 1999, white students had higher average science scores than their black and Hispanic peers. The gap between white and black students in science generally narrowed since 1970 for 9- and 13-year-olds, but not for 17-year-olds. The gap between white and Hispanic students at any age in 1999 was not significantly different from 1977. It has widened somewhat among 13-year-olds since 1992.

Trends in Average Scores for Males and Females

The long-term trend results for male and female students are summarized below.

Reading scores by gender

Among male students, overall gains in reading are evident across the assessment years for 9- and 13-year-olds. Among female students, only 13-year-olds show a significant increase between the first and last assessment year.

In 1999, female students had higher average reading scores than male students in each age group. Among 9-year-olds, the gap between males and females narrowed between 1971 and 1999.

Mathematics scores by gender

Among male students, 9- and 13-year-olds show overall gains in mathematics between 1973 and 1999. Among female students, overall gains across the years are evident at each age.

In 1999, the apparent difference between male and female students' average mathematics scores was not significant at any age. Among 17-year-olds, the score gap that had favored male students in the 1970s ultimately disappeared, and by 1999 the difference was no longer statistically significant.

Science scores by gender

Among male and female students, score declines in the 1970s and early 1980s have reversed, and scores generally increased during the 1980s and early 1990s; however, the 1999 average score of 17-year-olds in both groups remained lower than in 1969. For female 9-year-olds, score gains resulted in a 1999 average score that was higher than that in 1970.

In 1999, males outperformed females in science at ages 13 and 17, but the average score for male students was not significantly higher than that of female students at age 9. Among 17-year-olds, the score gap between males and females has narrowed since 1969.

Trends in Average Scores by Parental Education Level

Students in the long-term trend assessments are asked to identify the highest level of education attained by each of their parents. The highest education level of either parent, as reported by students, is used in these analyses. In each subject area and each age group, students who reported higher parental education levels tended to have higher average scores. Results by parental education level are available back to 1971 in reading, 1978 in mathematics, and 1977 in science. Trends in average scores for students who indicated different levels of parental education are summarized below. It should be noted that 9-year-olds' reports of their parents' education levels may not be as reliable as those of older students. As such, results for 9-year-olds are not included in the executive summary.

Reading scores by parental education

Among students with at least one parent who pursued education after high school, average reading scores in 1999 were lower than in 1971 for 17-year-olds. Among students whose parents' highest level of education was high school graduation, overall declines in performance are evident at ages 13 and 17. Among students whose parents did not graduate from high school, scores in 1999 were similar to those in 1971 at age 13, and the apparent increase at age 17 was not statistically significant.

Mathematics scores by parental education

Among students at the highest level of parental education—college graduation—scores in 1999 were similar to those in 1978 at ages 13 and 17. Among students whose parents' highest education level was some education after high school, 13-year-olds show overall gains across the assessment years. Among students whose parents did not go beyond high school graduation, score increases across the years are evident for 17-year-olds. Among students whose parents did not complete high school, overall gains in mathematics are evident at ages 13 and 17.

Science scores by parental education

Among students who reported that at least one parent had graduated from college, scores have increased since 1982 for 13- and 17-year-olds; however, 1999 and 1977 scores were similar at both ages. Among students whose parents' highest level of education was some education after high school, scores have increased since 1982 for 17-year-olds; however, 1999 and 1977 scores were similar for both 13- and 17-year-olds. Among students whose parents did not go beyond high school graduation, scores have increased for 17-year-olds since 1982; however, the apparent difference between 1977 and 1999 at ages 13 and 17 was not statistically significant. Among students whose parents did not finish high school, 1999 and 1977 scores were similar at age 17, and the apparent increase at age 13 was not statistically significant.

Trends in Average Scores by Type of School

The NAEP long-term trend assessment has examined public and nonpublic school students' performance separately since 1980 in reading, 1978 in mathematics, and 1977 in science. In 1999, nonpublic school students outperformed their public school peers in each subject area and at each age. Trends in the performance of both groups of students are summarized below.

Reading scores by type of school

Among public school students, the average reading score of 9-year-olds was lower in 1999 than in 1980. Among nonpublic school students, apparent increases between 1980 and 1999 at ages 13 and 17 were not statistically significant. At age 9, 1980 and 1999 average scores were similar.

Mathematics scores by type of school

Among public school students, overall gains in mathematics are evident for 9-, 13-, and 17-year-olds since 1978. Among nonpublic school students, overall gains are evident at ages 9 and 13; however, the apparent increase at age 17 was not statistically significant.

Science scores by type of school

Among public school students, overall gains in science are evident for 9-, 13-, and 17-year-olds since 1977. Among nonpublic school students, the apparent slight increase between 1977 and 1999 average scores at each age was not statistically significant.

Trends in School and Home Experiences

Students in the NAEP long-term trend assessment are asked several questions about school and home experiences considered to be related to achievement. Trends in students' responses to some of the questions are summarized below.

Coursetaking patterns

Mathematics. A greater percentage of 13-year-olds were taking prealgebra or algebra, and a smaller percentage were taking regular math in 1999 than in 1986.

A greater percentage of 17-year-olds had taken precalculus/calculus and algebra II in 1999 than in 1978.

- Similar increases in advanced mathematics coursetaking were seen for male and female 17-year-olds.
- Greater percentages of black and Hispanic 17-year-olds, as well as white students, were taking algebra II in 1999 than in 1978; however, only white students showed a significant increase in the percentage taking precalculus/calculus.

Science. A greater percentage of 13-year-olds in 1999 than in 1986 reported that the content of their science class was general, rather than focused on earth, physical, or life science.

Science coursetaking among 17-year-olds increased between 1986 and 1999 at all levels of course work—general science, biology, chemistry, and physics.

- A greater percentage of male and female 17-year-olds had taken general science, biology, and chemistry in 1999 than in 1986.
- The percentage of white 17-year-olds taking courses, at each level of science course work increased between 1986 and 1999. The percentage of black and Hispanic 17-year-olds taking chemistry, and the percentage of blacks taking biology, also increased.

Technology and scientific equipment in the classroom

A greater percentage of 13- and 17-year-olds in 1999 than in 1978 had access to a computer to learn mathematics, studied mathematics through computer instruction, and used a computer to solve mathematics problems. A greater percentage of 9-year-olds in 1999 than in 1977 used the following equipment while learning science: meter stick, telescope, thermometer, compass, balance, and stopwatch.

Homework

Homework was more likely to be assigned in 1999 than in 1984 for 9-year-olds, and more likely to be assigned in 1999 than in 1980 for 13- and 17-year-olds. The amount of time students spend doing homework each day, however, has not changed significantly. A greater percentage of 17-year-olds said they do homework for mathematics classes often in 1999 than in 1978. A greater percentage of 9- and 13-year-olds read more than 20 pages each day for school or for homework in 1999 than in 1984. There was no significant change, however, in the pages read per day by 17-year-olds.

Home experiences

The number of different types of reading materials in the home has decreased at all three ages between 1971 and

1999. A smaller percentage of 13- and 17-year-olds read for fun daily in 1999 than in 1984. There was no significant change in frequency of reading for fun among 9-year-olds. A smaller percentage of 17-year-olds saw adults reading daily in their homes in 1999 than in 1984.

A greater percentage of 17-year-olds were watching 3 or more hours of television each day in 1999 than in 1978. A smaller percentage of 9- and 13-year-olds were watching 6 or more hours of television each day in 1999 than in 1978.

Data source: The National Assessment of Educational Progress (NAEP) 1999 Long-Term Trend Assessment.

For technical information, see the complete report:

Campbell, J.R., Hombo, C.M., and Mazzeo, J. (2000). *NAEP 1999 Trends in Academic Progress: Three Decades of Student Performance* (NCES 2000–469).

Author affiliations: J.R. Campbell, C.M. Hombo, and J. Mazzeo, Educational Testing Service.

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To obtain the complete report (NCES 2000–469), call the toll-free ED Pubs number (877–433–7827), visit the NCES Web Site *(http://nces.ed.gov)*, or contact GPO (202–512–1800).

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Dropout Rates in the United States: 1999

Phillip Kaufman, Jin Y. Kwon, Steve Klein, and Christopher D. Chapman

This article was originally published as the Executive Summary of the Statistical Analysis Report of the same name. The sample survey data come primarily from the U.S. Census Bureau's October Current Population Survey (CPS), and the universe data primarily from the NCES Common Core of Data (CCD).

This report is the 12th in a series of National Center for Education Statistics (NCES) reports on high school dropout and completion rates. It presents data on rates in 1999, the most recent year for which data are available, and includes time series data on high school dropout and completion rates for the period 1972 through 1999. In addition to extending time series data reported in earlier years, this report examines the characteristics of high school dropouts and high school completers in 1999.

Event Dropout Rates

Event dropout rates for 1999 describe the proportion of youth ages 15–24 who dropped out of grades 10–12 in the 12 months preceding October 1999. Demographic data collected in the Current Population Survey (CPS) permit event dropout rates to be calculated across various individual characteristics, including race/ethnicity, sex, region of residence, and income level.

- Five out of every 100 young adults enrolled in high school in October 1998 left school before October 1999 without successfully completing a high school program (tables A and B). This estimate was similar to the estimates reported over the last 10 years, but lower than those reported in the early 1970s (figure A).
- Hispanic students were more likely than white students to leave school before completing a high school program: in 1999, 7.8 percent of Hispanic students were event dropouts, compared with 4.0 percent of white students. However, the event dropout rate of white students was not significantly different from those of black students (6.5 percent) or Asian students (5.0 percent).
- In 1999, young adults living in families with incomes in the lowest 20 percent of all family incomes were five times as likely as their peers from families in the

Table A.—Percentage of 15- through 24-year-olds who dropped out of grades 10–12 in the past year, percentage of 16- through 24-year-olds who were dropouts, and percentage of 18- through 24-year-olds who completed high school, by race/ethnicity: October 1999

Dropout and completion measures	Total[1]	White, non-Hispanic	Black, non-Hispanic	Hispanic	Asian/Pacific Islander
Percentage of youth ages 15–24 who dropped out of grades 10–12, October 1998 to October 1999 (event dropout rate)	5.0	4.0	6.5	7.8	5.0
Percentage of youth ages 16–24 who were dropouts in 1999 (status dropout rate)	11.2	7.3	12.6	28.6	4.3
Percentage of youth ages 18–24 who were high school completers in 1999[2] (completion rate)	85.9	91.2	83.5	63.4	94.0

[1]Due to relatively small sample sizes, American Indians/Alaska Natives are included in the total but are not shown separately.

[2]Excludes those still enrolled in high school.

SOURCE: U.S. Department of Commerce, Bureau of the Census, Current Population Survey (CPS), October 1999.

Table B.—Event dropout rates and number and distribution of 15- through 24-year-olds who dropped out of grades 10–12, by background characteristics: October 1999

Characteristic	Event dropout rate (percent)	Number of event dropouts (thousands)	Population enrolled (thousands)	Percent of all dropouts	Percent of population
Total	5.0	519	10,464	100.0	100.0
Sex					
Male	4.6	243	5,348	46.8	51.1
Female	5.4	276	5,116	53.2	48.9
Race/ethnicity[1]					
White, non-Hispanic	4.0	274	6,912	52.8	66.1
Black, non-Hispanic	6.5	106	1,645	20.4	15.7
Hispanic	7.8	105	1,349	20.2	12.9
Asian/Pacific Islander	5.0	25	497	4.8	4.7
Family income[2]					
Low	11.0	160	1,455	30.8	13.9
Middle	5.0	295	5,928	56.8	56.7
High	2.1	65	3,081	12.5	29.4
Age[3]					
15 through 16	3.4	102	2,954	19.7	28.2
17	3.4	122	3,614	23.5	34.5
18	4.7	125	2,674	24.1	25.6
19	11.1	104	934	20.0	8.9
20 through 24	23.1	67	289	12.9	2.8
Region					
Northeast	4.0	76	1,908	14.6	18.2
Midwest	3.9	98	2,524	18.9	24.1
South	4.8	178	3,674	34.3	35.1
West	7.1	168	2,357	32.4	22.5

[1]Due to relatively small sample sizes, American Indians/Alaska Natives are included in the total but are not shown separately.

[2]Low income is defined as the bottom 20 percent of all family incomes for 1999; middle income is between 20 and 80 percent of all family incomes; and high income is the top 20 percent of all family incomes.

[3]Age when a person dropped out may be 1 year younger, because the dropout event could occur at any time over a 12-month period.

NOTE: Because of rounding, detail may not add to totals.

SOURCE: U.S. Department of Commerce, Bureau of the Census, Current Population Survey (CPS), October 1999. (Originally published as table 1 on p. 4 of the complete report from which this article is excerpted.)

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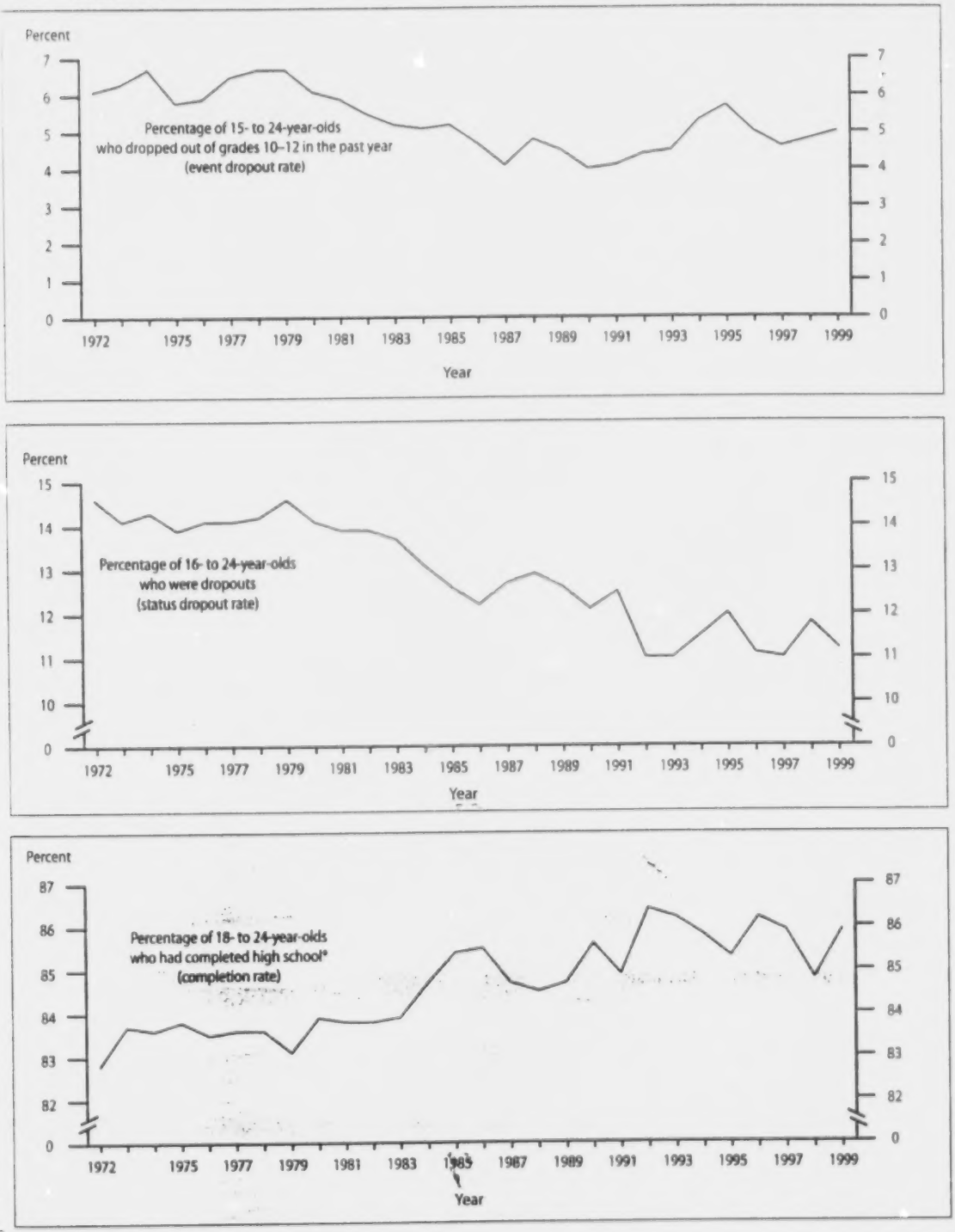
Figure A.—Percentage of 15- through 24-year-olds who dropped out of grades 10–12 in the past year, percentage of 16- through 24-year-olds who were dropouts, and percentage of 18- through 24-year-olds who completed high school: October 1972 through October 1999



*Excludes those still enrolled in high school.

NOTE: Data for 1987 through 1999 reflect new editing procedures instituted by the Bureau of the Census for cases with missing data on school enrollment items. Data for 1992 through 1999 reflect new wording of the educational attainment item in the CPS beginning in 1992. Data for 1994 through 1999 reflect changes in the CPS due to newly instituted computer-assisted interviewing and the change in population controls used in the 1990 census-based estimates, with adjustment for undercounting in the 1990 census.

SOURCE: U.S. Department of Commerce, Bureau of the Census, Current Population Survey (CPS), October 1972–99.

top 20 percent of the income distribution to drop out of high school.

- Although dropout rates were highest among students age 19 or older, about two-thirds (67.3 percent) of the current-year dropouts were ages 15 through 18; moreover, about two-fifths (43.2 percent) of the 1999 dropouts were ages 15 through 17.

Status Dropout Rates

Over the last decade, between 347,000 and 544,000 10th- through 12th-grade students left school each year without successfully completing a high school program. Status dropout rates represent the proportion of young adults ages 16 through 24 who are out of school and who have not earned a high school credential. Status rates are higher than event rates because they include all dropouts in this age range, regardless of when they last attended school.

- In October 1999, some 3.8 million young adults were not enrolled in a high school program and had not completed high school. These youths accounted for 11.2 percent of the 34.2 million 16- through 24-year-olds in the United States in 1999 (tables A and C). As noted with event rates, this estimate is consistent with the estimates reported over the last 10 years, but lower than those reported in the early 1970s (figure A).
- The status dropout rate of whites remains lower than that of blacks, but over the past quarter of a century, the difference between the rates of whites and blacks has narrowed. In addition, Hispanic young adults in the United States continue to have a higher status dropout rate than whites or blacks.
- In 1999, the status dropout rate for Asian/Pacific Islander young adults was 4.3 percent compared with 28.6 percent for Hispanics, 12.6 percent for blacks, and 7.3 percent for whites.
- In 1999, about 44.2 percent of Hispanic young adults born outside of the United States were high school dropouts. Hispanic young adults born inside the United States were much less likely to be dropouts. However, when looking at just those young adults born in the United States, Hispanic youths were still more likely to be dropouts than other young adults.

High School Completion Rates

The high school completion rate represents the proportion of 18- through 24-year-olds who have completed a high school diploma or an equivalent credential, including a General Educational Development (GED) credential.

- In 1999, about 85.9 percent of all 18- through 24-year-olds not enrolled in high school had completed high school (tables A and D), a slight increase since the early 1970s (figure A).
- High school completion rates have increased for white and black young adults since the early 1970s, with rates of 91.2 percent for whites and 83.5 percent for blacks in 1999. Analysis revealed no consistent upward trend during this period with rates variably increasing or decreasing depending on the time period under study. In addition, white and Asian/Pacific Islander young adults in 1999 were more likely than their black and Hispanic peers to have completed high school.

Method of High School Completion

Most young adults earn a regular diploma and graduate from high school; others complete high school by an alternative route, such as passing the GED test.

- In 1999, about 76.8 percent of the 18- through 24-year-olds who were not still enrolled in high school held regular diplomas, which represented the high school graduation rate (as opposed to the high school completion rate) (table D). An additional 9.2 percent had completed high school by taking a high school equivalency test such as the GED. This represents about 1.9 million young adults.

Table C.—Status dropout rates and number and distribution of 16- through 24-year-olds who were dropouts, by background characteristics: October 1999

Characteristic	Status dropout rate (percent)	Number of status dropouts (thousands)	Population (thousands)	Percent of all dropouts	Percent of population
Total	11.2	3,829	34,173	100.0	100.0
Sex					
Male	11.9	2,032	17,106	53.1	50.1
Female	10.5	1,797	17,066	46.9	49.9
Race/ethnicity[1]					
White, non-Hispanic	7.3	1,636	22,408	42.7	65.6
Black, non-Hispanic	12.6	621	4,942	16.2	14.5
Hispanic	28.6	1,445	5,060	37.7	14.8
Asian/Pacific Islander	4.3	65	1,515	1.7	4.4
Age					
16	3.5	139	3,995	3.6	11.7
17	6.7	278	4,137	7.3	12.1
18	12.6	489	3,870	12.8	11.3
19	13.6	559	4,121	14.6	12.1
20 through 24	13.1	2,366	18,050	61.8	52.8
Recency of immigration					
Born outside the 50 states and the District of Columbia					
Hispanic	44.2	994	2,250	26.0	6.6
Non-Hispanic	7.0	133	1,909	3.5	5.6
First generation[2]					
Hispanic	16.1	240	1,494	6.3	4.4
Non-Hispanic	5.0	94	1,893	2.5	5.5
Second generation or more[3]					
Hispanic	16.0	211	1,316	5.5	3.9
Non-Hispanic	8.5	2,156	25,130	56.3	74.1
Region					
Northeast	8.7	531	6,133	13.9	17.9
Midwest	8.3	676	8,177	17.7	23.8
South	12.7	1,516	11,902	39.6	34.8
West	13.8	1,106	8,021	28.9	23.5

[1]Due to relatively small sample sizes, American Indians/Alaska Natives are included in the total but are not shown separately.

[2]Individuals defined as "first generation" were born in the 50 states or the District of Columbia, and one or both of their parents were born outside the 50 states and the District of Columbia.

[3]Individuals defined as "second generation or more" were born in the 50 states or the District of Columbia, as were both of their parents.

NOTE: Because of rounding, detail may not add to totals.

SOURCE: U.S. Department of Commerce, Bureau of the Census, Current Population Survey (CPS), October 1999. (Originally published as table 3 on p. 12 of the complete report from which this article is excerpted.)

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Table D.—High school completion rates and number and distribution of 18- through 24-year-old completers not currently enrolled in high school or below, by background characteristics: October 1999

Characteristic	Completion rate (percent)			Number of completers (thousands)	Population (thousands)	Percent of all completers
	Total	Diploma	Alternative[1]			
Total	85.9	76.8	9.2	21,091	24,540	100.0
Sex						
Male	84.8	75.3	9.5	10,192	12,019	48.3
Female	87.1	78.2	8.9	10,899	12,521	51.7
Race/ethnicity[2]						
White, non-Hispanic	91.2	82.0	9.2	14,788	16,216	70.1
Black, non-Hispanic	83.5	72.9	10.7	2,847	3,408	13.5
Hispanic	63.4	54.9	8.5	2,325	3,655	11.0
Asian/Pacific Islander	94.0	87.8	6.2	1,007	1,072	4.8
Age						
18 through 19	83.8	74.0	9.8	5,592	6,670	26.5
20 through 21	85.8	77.0	8.8	6,056	7,059	28.7
22 through 24	87.4	78.4	9.0	9,444	10,811	44.8
Region						
Northeast	88.9	80.7	8.2	3,922	4,410	18.6
Midwest	89.9	81.5	8.4	5,229	5,815	24.8
South	84.0	73.8	10.3	7,113	8,465	33.7
West	82.5	73.5	9.0	4,826	5,850	22.9

[1]Completed high school by means of an equivalency test, such as a GED exam.

[2]Due to relatively small sample sizes, American Indians/Alaska Natives are included in the total but are not shown separately.

NOTE: Because of rounding, detail may not add to totals.

SOURCE: U.S. Department of Commerce, Bureau of the Census, Current Population Survey (CPS), October 1999. (Originally published as table 4 on p. 19 of the complete report from which this article is excerpted.)

Data sources:

NCES: The Common Core of Data (CCD), "Local Education Agency Universe Survey," 1992–93 through 1998–99; the National Education Longitudinal Study of 1988 Eighth-Graders (NELS:1988/1994); and the High School and Beyond Longitudinal Study of 1980 Sophomores (HS&B-So:1980/1982).

Other: U.S. Department of Commerce, Bureau of the Census, Current Population Survey (CPS), October 1972–99; and American Council on Education, GED Testing Service, *GED Statistical Report* (1990–99).

For technical information, see the complete report:

Kaufman, P., Kwon, J.Y., Klein, S., and Chapman, C.D. (2000). *Dropout Rates in the United States: 1999* (NCES 2001–022).

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To obtain the complete report (NCES 2001–022), call the toll-free ED Pubs number (877–433–7827), visit the NCES Web Site *(http://nces.ed.gov)*, or contact GPO (202–512–1800).

Indicators of School Crime and Safety: 2000

Phillip Kaufman, Xianglei Chen, Susan P. Choy, Sally A. Ruddy, Amanda K. Miller, Jill K. Fleury, Kathryn A. Chandler, Michael R. Rand, Patsy Klaus, and Michael G. Planty

This article was originally published as the Executive Summary of the report of the same name. The report is a joint effort of the Bureau of Justice Statistics (BJS) and the National Center for Education Statistics (NCES). The numerous data sources are listed at the end of this article.

Overview

Schools should be safe and secure places for all students, teachers, and staff members. Without a safe learning environment, teachers cannot teach and students cannot learn. In fact, as the data in this report show, more victimizations happen away from school than at school.[1] In 1998, students were about two times as likely to be victims of serious violent crime away from school as at school.

In 1998, students ages 12 through 18 were victims of more than 2.7 million total crimes at school. In that same year, these students were victims of about 253,000 serious violent crimes at school (i.e., rape, sexual assault, robbery, and aggravated assault). There were also 60 school-associated violent deaths in the United States between July 1, 1997, and June 30, 1998—including 47 homicides.

The total nonfatal victimization rate for young people declined between 1993 and 1998. The percentage of students being victimized at school also declined over the last few years. Between 1995 and 1999, the percentage of students who reported being victims of crime at school decreased from 10 percent to 8 percent (figure A). This decline was due in part to a decline for students in grades 7 through 9. Between 1995 and 1999, the prevalence of reported victimization dropped from 11 percent to 8 percent for seventh-graders, from 11 percent to 8 percent for eighth-graders, and from 12 percent to 9 percent for ninth-graders.

However, for some types of crimes at school, rates have not changed. For example, between 1993 and 1997, the percentage of students in grades 9 through 12 who were threatened or injured with a weapon on school property in the past 12 months remained constant—at about 7 or 8 percent. The percentage of students in grades 9 through 12 who reported being in a physical fight on school property in the past 12 months also remained unchanged between 1993 and 1997—at about 15 percent.

[1]The reader should be cautious in making comparisons between victimization rates on school property and elsewhere. These data do not take into account the number of hours that students spend on school property and the number of hours they spend elsewhere.

As the rate of victimization in schools has declined or remained constant, students also seem to feel more secure at school now than just a few years ago. The percentage of students ages 12 through 18 who reported avoiding one or more places at school for their own safety decreased between 1995 and 1999—from 9 to 5 percent. Furthermore, the percentage of students who reported that street gangs were present at their schools decreased from 1995 to 1999. In 1999, 17 percent of students ages 12 through 18 reported that they had street gangs at their schools, compared with 29 percent in 1995.

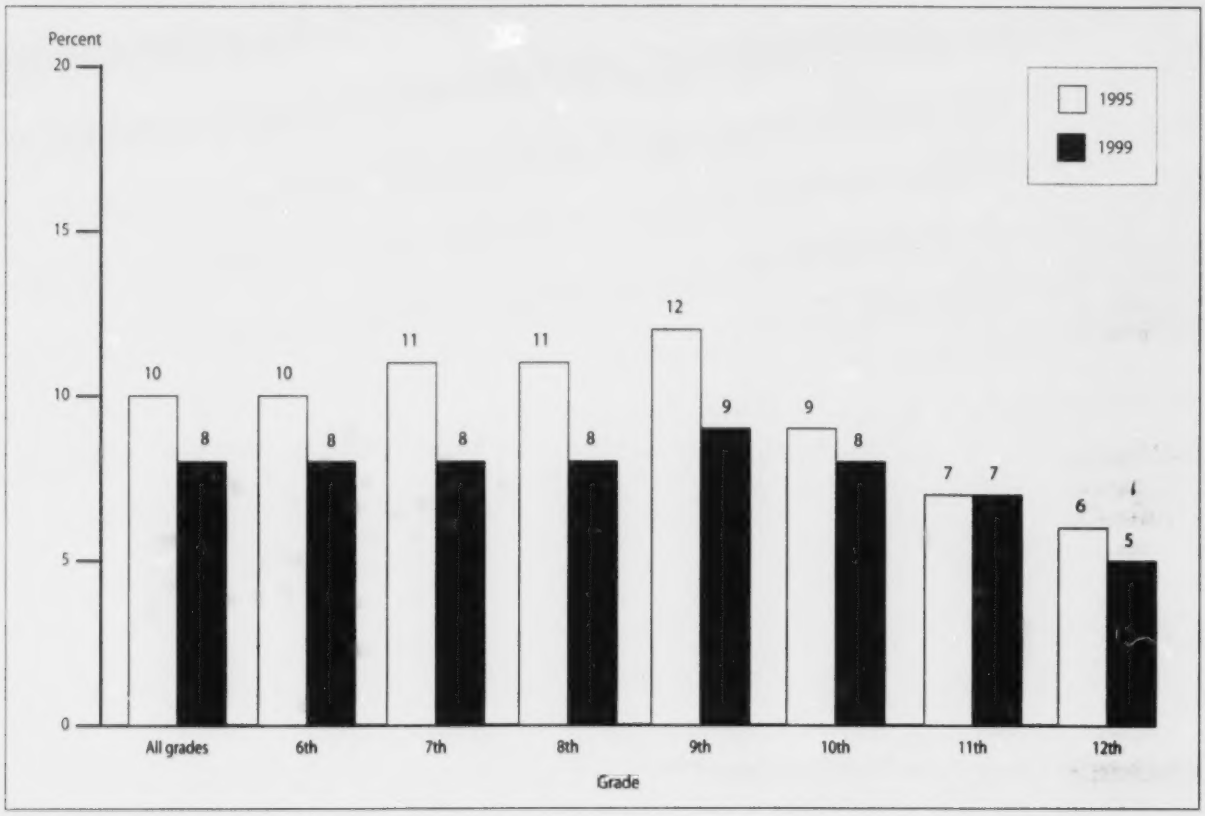
There was an increase in the use of marijuana among students in grades 9 through 12 between 1993 and 1995, but no change between 1995 and 1997. In 1997, about 26 percent of students in these grades had used marijuana in the last 30 days. In 1995 and 1997, moreover, almost one-third of all students in grades 9 through 12 (32 percent) reported that someone had offered, sold, or given them an illegal drug on school property—an increase from 24 percent in 1993.

Therefore, the data shown in this report present a mixed picture of school safety. While overall school crime rates have declined, violence, gangs, and drugs are still evident in some schools, indicating that more work needs to be done.

Report Organization

This report, the third in a series of annual reports on school crime and safety from the Bureau of Justice Statistics (BJS) and the National Center for Education Statistics (NCES), presents the latest available data on school crime and student safety. The report repeats many indicators from the 1999 report but also provides updated data on fatal and nonfatal student victimization, nonfatal teacher victimization, students' perceptions of safety and the presence of gangs, and students' avoidance of places at school. In addition, it provides new data on students' reports of being the target of derogatory hate-related language and seeing hate-related graffiti at school.

Figure A.—Percentage of students ages 12 through 18 who reported criminal victimization at school during the previous 6 months, by grade level: 1995 and 1999



NOTE: This figure presents the prevalence of total victimization, which is a combination of violent victimization and theft. "At school" means in the school building, on school property, or on the way to or from school.

SOURCE: U.S. Department of Justice, Bureau of Justice Statistics, School Crime Supplement to the National Crime Victimization Survey, 1995 and 1999. (Originally published as figure 3.1 on p. 8 of the complete report from which this article is excerpted.)

The report is organized as a series of indicators, with each indicator presenting data on a different aspect of school crime and safety. It starts with the most serious violence. There are five sections to the report: Violent Deaths at School; Nonfatal Student Victimization—Student Reports; Violence and Crime at School—Public School Principal/ Disciplinarian Reports; Nonfatal Teacher Victimization at School—Teacher Reports; and School Environment. Each section contains a set of indicators that, taken together, describe a distinct aspect of school crime and safety.

Rather than relying on data from a large omnibus survey of school crime and safety, this report uses a variety of independent data sources from federal departments and agencies including BJS, NCES, and the Centers for Disease Control and Prevention (CDC). Each data source has an independent sample design, data collection method, and questionnaire design, all of which may be influenced by the unique perspective of the primary funding agency. By combining multiple and independent sources of data, it is hoped that this report will present a more complete portrait of school crime and safety than would be possible with any single source of information.

However, because the report relies on so many different data sets, the age groups, the time periods, and the types of respondents analyzed can vary from indicator to indicator. Readers should keep this in mind as they compare data from different indicators. Furthermore, while every effort has been made to keep key definitions consistent across indicators, different surveys sometimes use different definitions, such as those for specific crimes and "at school." Therefore, caution should be used in making comparisons between results from different data sets.

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Key Findings

Some of the key findings from the various sections of this report are as follows:

Violent Deaths at School

From July 1, 1997, through June 30, 1998, there were 60 school-associated violent deaths in the United States. Forty-seven of these violent deaths were homicides, 12 were suicides, and one was a teenager killed by a law enforcement officer in the line of duty. Thirty-five of the 47 school-associated homicides were of school-age children. By comparison, a total of 2,752 children ages 5 through 19 were victims of homicide in the United States from July 1, 1997, through June 30, 1998. Seven of the 12 school-associated suicides occurring from July 1, 1997, through June 30, 1998, were of school-age children. A total of 2,061 children ages 5 through 19 committed suicide that year.

Nonfatal Student Victimization—Student Reports

Students ages 12 through 18 were more likely to be victims of nonfatal serious violent crime—including rape, sexual assault, robbery, and aggravated assault—away from school than when they were at school. In 1998, students in this age range were victims of about 550,000 serious violent crimes away from school, compared with about 253,000 at school.

- The percentage of students in grades 9 through 12 who have been threatened or injured with a weapon on school property[2] has not changed significantly in recent years. In 1993, 1995, and 1997, about 7 to 8 percent of students reported being threatened or injured with a weapon such as a gun, knife, or club on school property in the past 12 months.
- In 1998, 12- through 18-year-old students living in urban, suburban, and rural locales were equally vulnerable to serious violent crime and theft at school. Away from school, however, urban and suburban students were more vulnerable to serious violent crime and theft than were rural students.
- In 1998, younger students (ages 12 through 14) were more likely than older students (ages 15 through 18) to be victims of crime at school. However, older students were more likely than younger students to be victimized away from school.

Violence and Crime at School—Public School Principal/Disciplinarian Reports

In 1996–97, 10 percent of all public schools reported at least one serious violent crime to the police or a law enforcement representative. Principals' reports of serious violent crimes included murder, rape or other type of sexual battery, suicide, physical attack or fight with a weapon, or robbery. Another 47 percent of public schools reported a less serious violent or nonviolent crime (but not a serious violent one). Crimes in this category include physical attack or fight without a weapon, theft/larceny, and vandalism. The remaining 43 percent of public schools did not report any of these crimes to the police.

- Elementary schools were much less likely than either middle or high schools to report any type of crime in 1996–97. They were much more likely to report vandalism (31 percent of elementary schools) than any other crime (19 percent or less).
- At the middle and high school levels, physical attack or fight without a weapon was generally the most commonly reported crime in 1996–97 (9 incidents per 1,000 middle school students and 8 incidents per 1,000 high school students). Theft or larceny was more common at the high school than at the middle school level (6 vs. 4 incidents per 1,000 students).

Nonfatal Teacher Victimization at School—Teacher Reports

Over the 5-year period from 1994 through 1998, teachers were victims of 1,755,000 nonfatal crimes at school, including 1,087,000 thefts and 668,000 violent crimes (rape or sexual assault, robbery, and aggravated and simple assault). This translates into 83 crimes per 1,000 teachers per year.

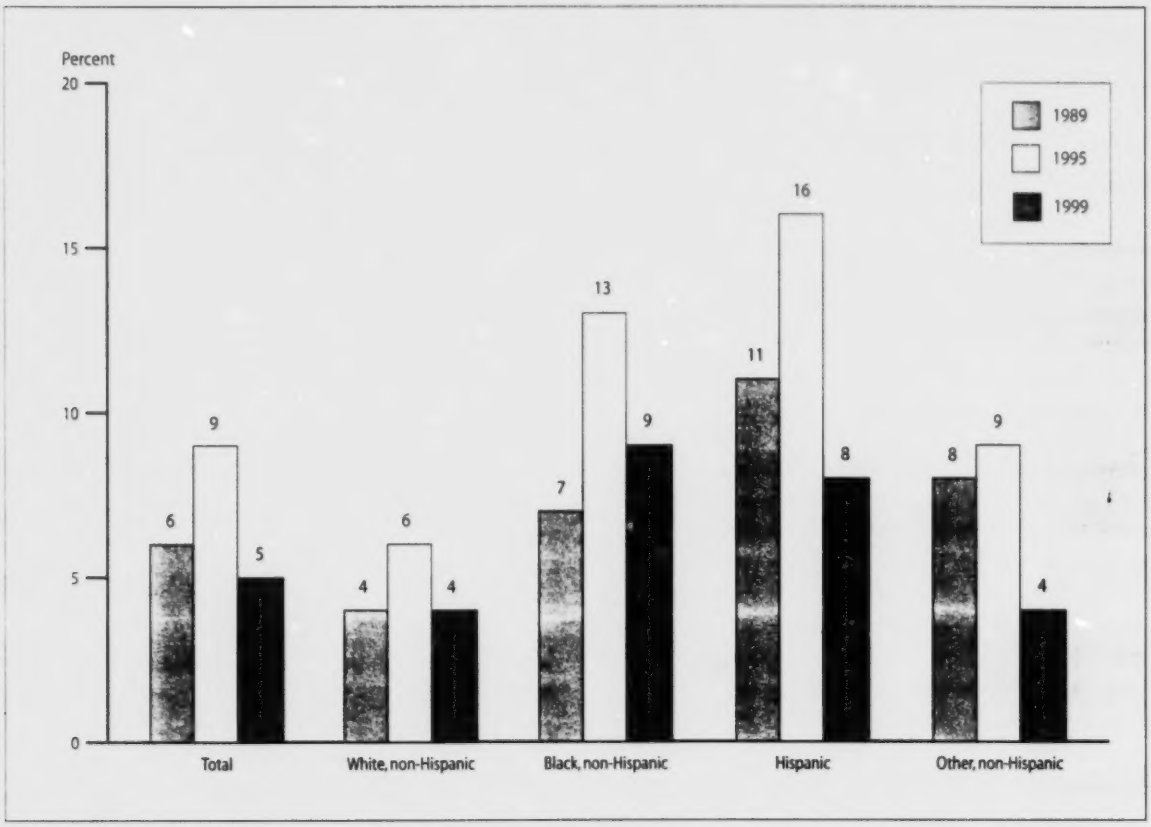
- In the period from 1994 through 1998, senior high school and middle/junior high school teachers were more likely than elementary school teachers to be victims of violent crimes (most of which were simple assaults) (38 and 60 crimes per 1,000 senior and middle/junior high school teachers, respectively, vs. 18 crimes per 1,000 elementary school teachers).
- In the 1993–94 school year, 12 percent of all elementary and secondary school teachers were threatened with injury by a student, and 4 percent were physically attacked by a student. This represented about 341,000 teachers who were victims of threats of injury by students that year and 119,000 teachers who were victims of attacks by students.

School Environment

Between 1995 and 1999, the percentages of students who felt unsafe while they were at school and while they were going to and from school decreased. In 1995, 9 percent of

[2] Definitions for "on school property" and "at school" may differ.

Figure B.—Percentage of students ages 12 through 18 who reported fearing being attacked or harmed at school during the previous 6 months, by race/ethnicity: 1989, 1995, and 1999



NOTE: Comparisons between the 1989 data and the 1995 and 1999 data should be made with caution due to changes in the questionnaire. Also, the 1989 data include students ages 12 through 19. Includes students who reported that they sometimes or most of the time feared being victimized in this way. "At school" means in the school building, on the school grounds, or on a school bus.

SOURCE: U.S. Department of Justice, Bureau of Justice Statistics, School Crime Supplement to the National Crime Victimization Survey, 1989, 1995, and 1999. (Originally published as figure 13.1 on p. 31 of the complete report from which this article is excerpted.)

students ages 12 through 18 sometimes or most of the time feared they were going to be attacked or harmed at school. In 1999, this percentage had fallen to 5 percent (figure B). During the same period, the percentage of students fearing they would be attacked while traveling to and from school fell from 7 percent to 4 percent.

- Between 1993 and 1997, the percentage of students in grades 9 through 12 who reported carrying a weapon on school property within the previous 30 days fell from 12 percent to 9 percent (a 25 percent reduction).
- Between 1995 and 1999, the percentage of students ages 12 through 18 who avoided one or more places at school for fear of their own safety decreased, from 9 to 5 percent. The 1999 percentage, however, still represented 1.1 million students.
- Between 1995 and 1999, the percentage of students who reported that street gangs were present at their schools decreased. In 1995, 29 percent of students reported gangs being present at their schools. By 1999, this percentage had fallen to 17 percent.
- In 1997, about 51 percent of students in grades 9 through 12 had at least one drink of alcohol in the previous 30 days. A much smaller percentage (about 6 percent) had at least one drink on school property during the same period.

- There was an increase in the use of marijuana among students between 1993 and 1995, but no change between 1995 and 1997. About one-quarter (26 percent) of 9th- through 12th-graders reported using marijuana in the last 30 days in 1997. However, marijuana use on school property did not increase significantly between 1993 and 1995, nor between 1995 and 1997.
- In 1995 and 1997, almost one-third of all students in grades 9 through 12 (32 percent) reported that someone had offered, sold, or given them an illegal drug on school property. This was an increase from 1993, when 24 percent of such students reported that illegal drugs were available to them on school property.
- In 1999, about 13 percent of students ages 12 through 18 reported that someone at school had used hate-related words against them. That is, in the prior 6 months someone at school called them a derogatory word having to do with race/ethnicity, religion, disability, gender, or sexual orientation. In addition, about 36 percent of students saw hate-related graffiti at school.

Data sources:

NCES: Schools and Staffing Survey (SASS), 1993–94, "Public School Teacher Questionnaire," "Private School Teacher Questionnaire," "Public School Questionnaire," and "Private School Questionnaire"; Fast Response Survey System, "Principal/School Disciplinarian Survey on School Violence," FRSS 63, 1997.

Bureau of Justice Statistics (BJS): National Crime Victimization Survey (NCVS), 1992–98 (annual).

Joint NCES and BJS: School Crime Supplement (SCS) to the National Crime Victimization Survey, 1989, 1995, and 1999.

Centers for Disease Control and Prevention (CDC): The National School-Based Youth Risk Behavior Survey (YRBS), 1993, 1995, and 1997; School-Associated Violent Death Study (SAVD), 1997–98; and *Vital Statistics of the United States*, 1997 and 1998.

Other: The FBI's 1997 and 1998 *Supplementary Homicide Reports* and the following article:

Kachur, S.P., et al. (1996). School-Associated Violent Deaths in the United States, 1992 to 1994. *Journal of the American Medical Association 275* (22): 1729–1733.

For technical information, see the complete report:

Kaufman, P., Chen, X., Choy, S.P., Ruddy, S.A., Miller, A.K., Fleury, J.K., Chandler, K.A., Rand, M.R., Klaus, P., and Planty, M.G. (2000). *Indicators of School Crime and Safety: 2000* (NCES 2001–017 or NCJ-184176).

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To obtain the complete report (NCES 2001–017 or NCJ-184176), call the toll-free ED Pubs number (877–433–7827), visit the NCES Web Site (*http://nces.ed.gov*) or the BJS Web Site (*http://www.ojp.usdoj.gov/bjs/*), or contact the BJS Clearinghouse at 1–800–732–3277.

Teachers' Tools for the 21st Century: A Report on Teachers' Use of Technology

Becky Smerdon, Stephanie Cronen, Lawrence Lanahan, Jennifer Anderson, Nicholas Iannotti, and January Angeles

This article was originally published as the Executive Summary of the Statistical Analysis Report of the same name. The sample survey data come primarily from the "Survey on Public School Teachers Use of Computers and the Internet," conducted through the NCES Fast Response Survey System (FRSS), but also from other sources listed at the end of this article.

Background

As the availability of computers and the Internet in schools and classrooms has grown (e.g., Williams 2000), so has interest in the extent to which these technologies are being used and for what purposes. Using the Fast Response Survey System (FRSS), the National Center for Education Statistics (NCES) administered a short survey of public school teachers in 1999 that included items on teachers' use of computers and the Internet. This report draws on that survey to describe teachers' use of education technology in their classrooms and schools, the availability of this technology in their classrooms and schools, their training and preparation for its use, and the barriers to technology use they encounter. Additional data sources (e.g., National Assessment of Educational Progress [NAEP], Current Population Survey [CPS]) are used throughout the report to provide background information on these topics.

Key Findings

Technology and instruction

Over the past 10 years, NCES has administered surveys focusing primarily on technology (e.g., computers, connections to the Internet) infrastructure in schools and classrooms. The 1999 FRSS survey focused on the availability of technology and the ways in which technology is used. According to this survey

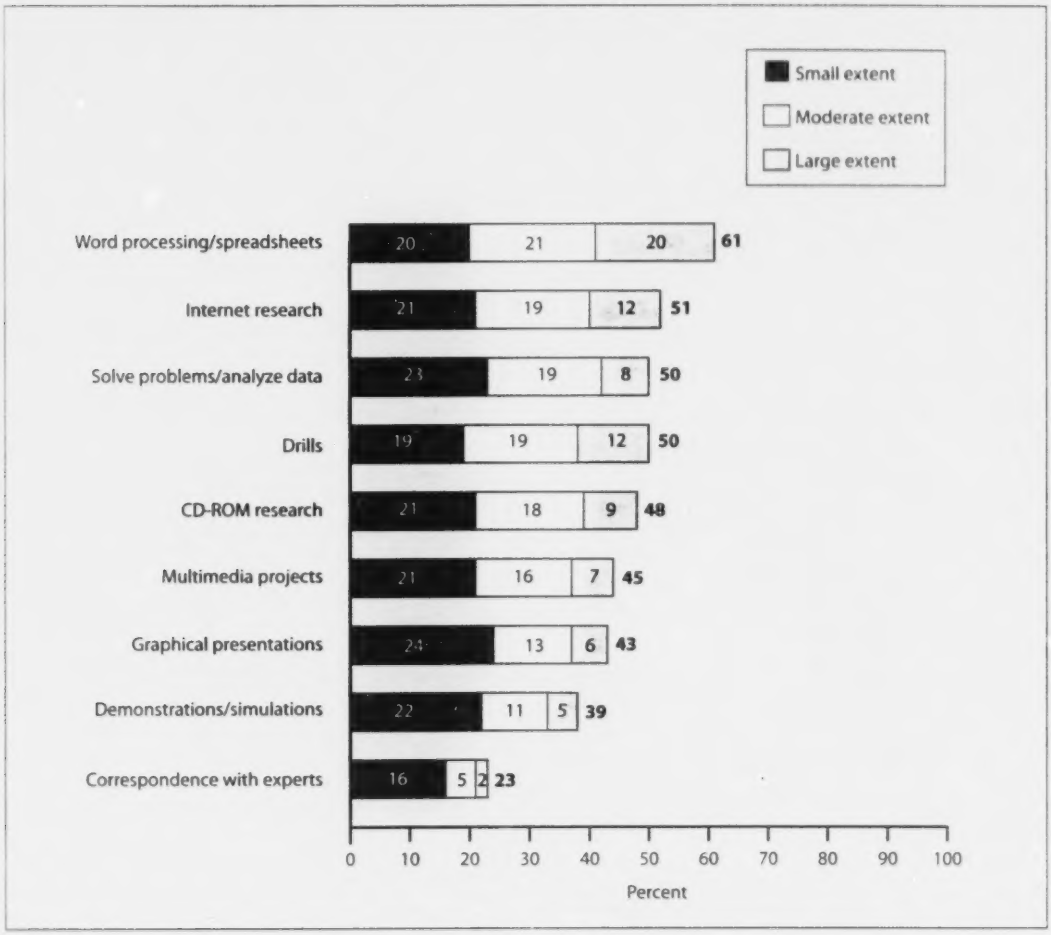
- Approximately half of the public school teachers who had computers or the Internet available in their schools used them for classroom instruction. Teachers assigned students to use these technologies for word processing or creating spreadsheets most frequently (61 percent did this to some extent), followed by Internet research (51 percent), practicing drills (50 percent), and solving problems and analyzing data (50 percent) (figure A). Moreover, many teachers used computers or the Internet to conduct a number of preparatory and administrative tasks (e.g., creating instructional materials, gathering information for planning lessons) and communicative tasks (e.g., communication with colleagues).
- Among those with technology available in their schools, teachers in low-minority and low-poverty schools were generally more likely than teachers in high-minority and high-poverty schools to use computers or the Internet for a wide range of activities, including gathering information at school, creating instructional materials at school, communicating with colleagues at school, and instructing students. For example, 57 percent of teachers in schools with less than 6 percent minority enrollments used computers or the Internet for Internet research, compared with 41 percent of teachers in schools with 50 percent or more minority enrollments.
- Among teachers with computers available at home, teachers with the fewest years of experience were more likely than teachers with the most years of experience to use computers or the Internet at home to gather information for planning lessons (76 percent compared with 63 percent) and create instructional materials (91 percent compared with 82 percent). They were also generally more likely than more experienced teachers to use these technologies to access model lesson plans at school and at home.

Availability and use of technology

On a most basic level, teachers may be more likely to integrate computers and the Internet into classroom instruction if they have access to adequate equipment and connections. The 1999 FRSS survey on teachers' use of technology provides teachers' perspectives on the availability of computers and the Internet in their schools and classrooms and the general frequency with which these technologies are used. Results of this survey indicate that

- Nearly all public school teachers (99 percent) reported having computers available somewhere in their schools in 1999; 84 percent had computers available in their classrooms, and 95 percent had computers available elsewhere in the school. Teachers were generally more likely to use computers and the Internet when these technologies were located in

Figure A.—Percent of public school teachers who have computers at school assigning students different types of work using the computer or the Internet to a small, moderate, or large extent: 1999



NOTE: Teachers who reported that computers were not available to them anywhere in the school were excluded from the analyses presented in this figure. Detail may not sum to totals due to rounding.

SOURCE: U.S. Department of Education, National Center for Education Statistics, Fast Response Survey System, "Survey on Public School Teachers Use of Computers and the Internet," FRSS 70, 1999. (Originally published as figure 2.6 on p. 25 of the complete report from which this article is excerpted.)

their classrooms than elsewhere in the school, while their students were more likely to use computers and the Internet outside the classroom than inside. Additionally, teachers and students with computers or Internet connections *in their classrooms* used these technologies *elsewhere in the school* more often than teachers and students without such tools in their classrooms.

- Most public school teachers (84 percent) reported having at least one computer in their classrooms in 1999. Thirty-six percent of teachers had one computer in their classrooms, 38 percent reported having two to five computers in their classrooms, and 10 percent reported having more than five computers in their classrooms (table A). Teachers and students with more computers or computers connected to the Internet in their classrooms generally used these technologies more often than teachers and students with fewer computers or Internet connections.
- In 1999, computer and Internet availability was not equally distributed among schools. For example, teachers in schools with the lower minority enrollments (less than 6 percent or 6 to 20 percent) were more likely than teachers in schools with the highest minority enrollments (50 percent or more minority enrollments) to have the Internet available in their

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Table A.—Percent of public school teachers reporting varying numbers of computers available in the classroom, by school characteristics: 1999

School characteristics	Number of computers available in the classroom			
	None	One	2–5	More than 5
All public school teachers	**16**	**36**	**38**	**10**
Instructional level				
Elementary	11	33	46	10
Secondary	25	45	20	10
Enrollment size				
Less than 300	13	28	46	12
300 to 999	12	36	43	9
1,000 or more	29	41	20	10
Locale				
City	20	34	37	9
Urban fringe	17	35	38	10
Town	8	43	38	11
Rural	13	37	38	11
Percent minority enrollment in school				
Less than 6 percent	16	34	40	10
6 to 20 percent	13	40	38	9
21 to 49 percent	11	39	40	10
50 percent or more	23	33	35	10
Percent of students in school eligible for free or reduced-price school lunch				
Less than 11 percent	13	42	35	9
11 to 30 percent	16	36	38	10
31 to 49 percent	16	37	38	9
50 to 70 percent	13	38	38	11
71 percent or more	18	32	40	11

NOTE: Detail may not sum to 100 due to rounding.

SOURCE: U.S. Department of Education, National Center for Education Statistics, Fast Response Survey System, "Survey on Public School Teachers Use of Computers and the Internet," FRSS 70, 1999. (Originally published as table 3.2 on p. 42 of the complete report from which this article is excerpted.)

classrooms (69 percent and 71 percent compared with 51 percent). Moreover, teachers in schools with the lowest minority enrollments (less than 6 percent) were more likely to report having two to five computers connected to the Internet than teachers in schools with the highest minority enrollments (19 percent compared with 9 percent).

- Eighty-two percent of public school teachers reported having a computer available at home, 63 percent of public school teachers had the Internet available at home, and 27 percent reported that their school had a network that they could use to access the Internet from home.

Teacher preparation and training

Teachers' preparation and training to use education technology is a key factor to consider when examining their use of computers and the Internet for instructional purposes. The 1999 FRSS survey indicates that

- In 1999, approximately one-third of teachers reported feeling well prepared or very well prepared to use computers and the Internet for classroom instruction, with less experienced teachers indicating they felt better prepared to use technology than their more experienced colleagues. For many instructional activities, teachers who reported feeling better prepared to use technology were generally more likely to use it than teachers who indicated that they felt unprepared.
- Teachers cited independent learning most frequently as preparing them for technology use (93 percent), followed by professional development activities (88 percent) and their colleagues (87 percent). Whereas half of all teachers reported that college

and graduate work prepared them to use technology, less experienced teachers were generally much more likely than their more experienced colleagues to indicate that this education prepared them to use computers and the Internet.

- Most teachers indicated that professional development activities were available to them on a number of topics, including the use of computers and basic computer training, training on software applications, and the use of the Internet (ranging from 96 percent to 87 percent). Among teachers reporting these activities available, participation was relatively high (ranging from 83 to 75 percent), with more experienced teachers generally more likely to participate than less experienced teachers. Teachers indicated that follow-up and advanced training and use of other advanced telecommunications* were available less frequently (67 percent and 54 percent, respectively), and approximately half of the teachers reporting that these two activities were available to them participated in them.
- Over a 3-year time period, most teachers (77 percent) participated in professional development activities in the use of computers or the Internet that lasted the equivalent of 4 days or less (i.e., 32 or fewer hours). Teachers who spent more time in professional development activities were generally more likely than teachers who spent less time in such activities to indicate they felt well prepared or very well prepared to use computers and the Internet for instruction.

Barriers to teachers' use of technology

Certain characteristics of classrooms and schools, such as equipment, time, technical assistance, and leadership, may act as either barriers to or facilitators of technology use. The 1999 FRSS survey indicates that

- In 1999, the barriers to the use of computers and the Internet for instruction most frequently reported by public school teachers were not enough computers (78 percent), lack of release time for teachers to learn how to use computers or the Internet (82 percent), and lack of time in schedule for students to use computers in class (80 percent). Among the barriers most frequently reported by teachers to be "great" barriers to their use of computers or the Internet for instruction in 1999 were not enough computers (38 percent) and lack of release time for teachers to learn how to use computers or the Internet (37 percent).
- Teachers' perceptions of barriers to technology use varied by a number of teacher and school characteristics. For example, secondary teachers, teachers in large schools, and teachers in city schools were more likely than elementary teachers, teachers in small schools, and teachers in rural schools, respectively, to report that not enough computers was a great barrier. Additionally, teachers in schools with more than 50 percent minority enrollments were more likely to cite outdated, incompatible, or unreliable computers as a great barrier than teachers in schools with less than 6 percent minority enrollments (32 percent compared with 22 percent).
- Generally, teachers who perceived lacking computers and time for students to use computers as great barriers were less likely than those who did not perceive these conditions as barriers to assign students to use computers or the Internet for some instructional activities. For example, teachers who reported insufficient numbers of computers as a great barrier were less likely than teachers reporting that this was not a barrier to assign students to use computers or the Internet to a "large extent" for practicing drills (9 percent compared with 19 percent), word processing or creating spreadsheets (14 percent compared with 25 percent), and solving problems and analyzing data (6 percent compared with 13 percent).

Summary

The primary focus of this report is teachers' use of computers and the Internet for instructional purposes. Findings presented in this report indicate that about half of the teachers with computers available in their schools used them for classroom instruction. Moreover, teachers' use of technology was related to their training and preparation and work environments. As described in detail in the report, teachers were more likely to use these technologies when the technologies were available to them, available in their classrooms as opposed to computer labs, and available in greater numbers. Moreover, teachers who reported feeling better prepared were more likely to use these technologies than their less prepared colleagues. (Teachers who spent more time in professional development reported feeling better prepared than their colleagues.) Finally, teachers who

*"Other advanced telecommunications" includes interactive audio, video, and closed-circuit TV.

perceived that lacking computers and time for students to use computers as great barriers were less likely than their colleagues to assign students to use computers or the Internet for some instructional activities.

Reference

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Data sources:

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Other: The National Assessment of Educational Progress (NAEP) 1990 and 1992 Mathematics and Reading Assessments, 1994 and 1998 Reading Assessment, and 1996 Mathematics and Science Assessments; U.S. Bureau of the Census, Current Population Survey (CPS), November 1994, October 1997, and December 1998.

For technical information, see the complete report:

Smerdon, B., Cronen, S., Lanahan, L., Anderson, J., Iannotti, N., and Angeles, J. (2000). *Teachers' Tools for the 21st Century: A Report on Teachers' Use of Technology* (NCES 2000–102).

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Salaries and Tenure of Full-Time Instructional Faculty on 9- and 10-Month Contracts: 1998–1999
Rosa M. Fernandez 53

Salaries and Tenure of Full-Time Instructional Faculty on 9- and 10-Month Contracts: 1998–1999

Rosa M. Fernandez

This article was originally published as the Summary section of the E.D. Tabs report of the same name. The universe data are from the NCES Integrated Postsecondary Education Data System "Salaries, Tenure, and Fringe Benefits of Full-Time Instructional Faculty Survey" (IPEDS-SA).

Introduction

This report presents tabulations for academic year 1998–99 of the number, tenure, and average salaries of full-time instructional faculty on 9- and 10-month contracts. These data are from the "Salaries, Tenure, and Fringe Benefits of Full-Time Instructional Faculty Survey," a component of the Integrated Postsecondary Education Data System (IPEDS) of the U.S. Department of Education's National Center for Education Statistics (NCES).

Data in this report present faculty salaries for the 1998–99 academic year in all degree-granting postsecondary institutions eligible to participate in Title IV financial aid programs. NCES subdivides the postsecondary institutional universe into schools that are eligible to receive Title IV federal financial assistance and those that are not. Lists of Title IV postsecondary institutions are maintained by the U.S. Department of Education's Office of Postsecondary Education, through the Postsecondary Education Participation System (PEPS) file.

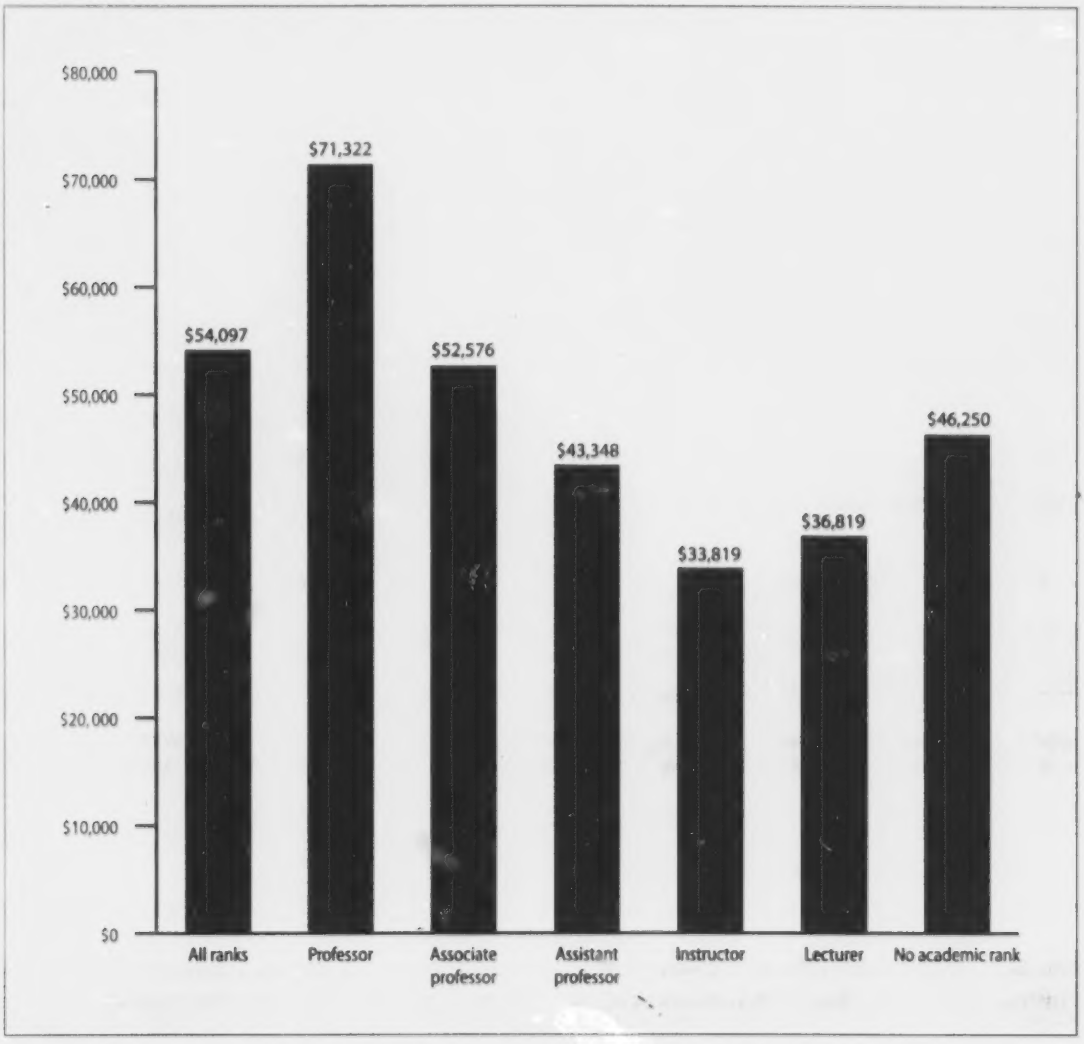
Tenure of Faculty in Title IV Degree-Granting Institutions

In 1998–99, degree-granting institutions (those offering programs resulting in associate's or higher degrees) reported that 60 percent of the total full-time instructional faculty on 9- and 10-month contracts were tenured (232,736 out of 390,276). When the data are examined by gender, 67 percent of men and 48 percent of women were tenured. The percent who were tenured also varied by state: Arkansas reported that 43 percent of its 3,663 faculty were tenured, while California reported that 72 percent of its 37,920 faculty were tenured. California also reported the largest number of faculty.

Average Salaries of Faculty in Title IV Degree-Granting Institutions

In 1998–99, the 3,921 postsecondary degree-granting institutions reported 390,276 full-time instructional faculty on 9- and 10-month contracts and average salaries of $54,097 for all ranks combined. Average salaries varied by

Figure A.—Average salaries of full-time instructional faculty on 9- and 10-month contracts in Title IV degree-granting institutions, by academic rank, 50 states and the District of Columbia: Academic year 1998–99



SOURCE: U.S. Department of Education, National Center for Education Statistics, Integrated Postsecondary Education Data System, "Salaries, Tenure, and Fringe Benefits of Full-Time Instructional Faculty Survey" (IPEDS-SA:1998–99).

academic rank and ranged from $71,322 for professors to $33,819 for instructors (figure A).

Salaries by gender of faculty

At degree-granting institutions, male faculty earned an average of about $10,600 more than female faculty, all ranks combined. This disparity is greater than any difference within a rank because relatively few women are reported with a rank of assistant professor or higher. Within faculty ranks, the differential between men's and women's salaries was highest among professors and declined with decreasing rank to the level of instructor. Among professors, men's salaries averaged about $9,000 more than women's salaries; among associate professors, the difference in average salaries was about $3,500; among assistant professors, it was about $2,800; and among instructors, it was less than $1,600.

Salaries by level and control of institution

Faculty in 4-year degree-granting institutions had noticeably higher salaries than those in 2-year degree-granting institutions. On average, faculty in 4-year schools earned

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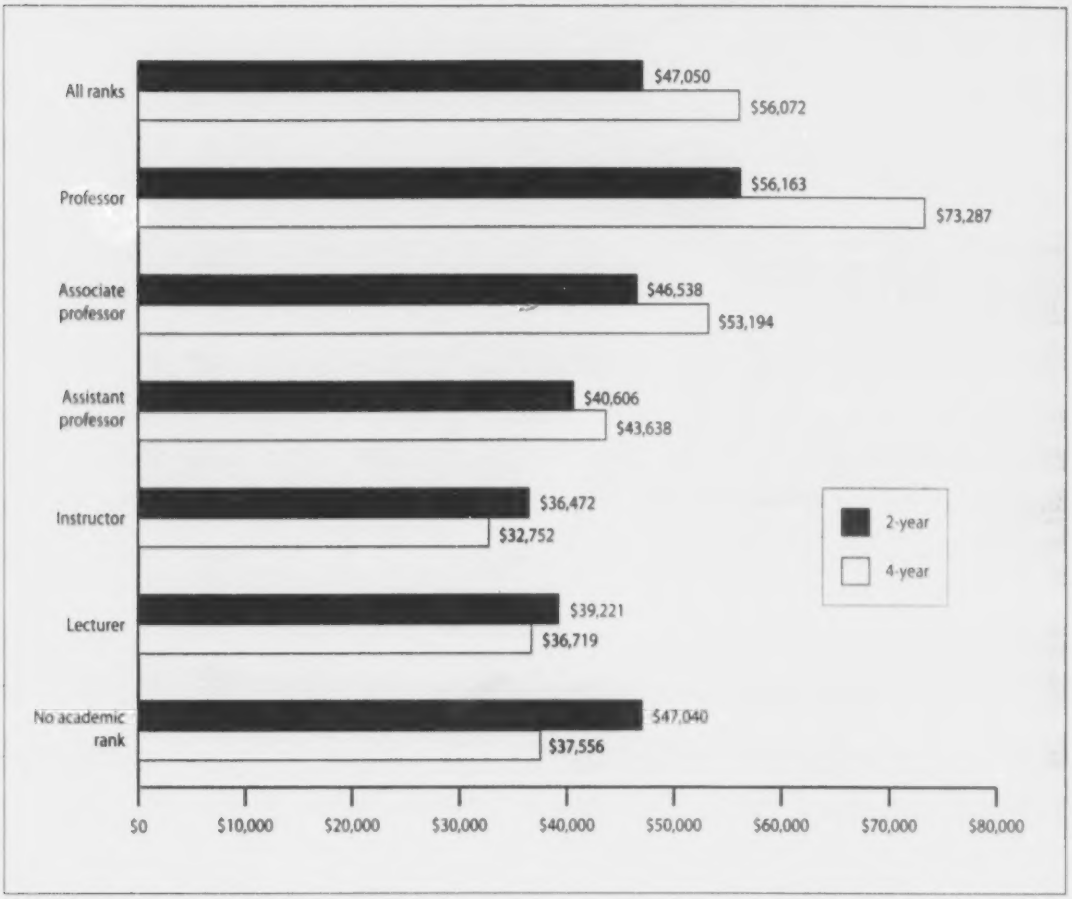
Figure B.—Average salaries of full-time instructional faculty on 9- and 10-month contracts in Title IV degree-granting institutions, by academic rank and level of institution, 50 states and the District of Columbia: Academic year 1998–99



SOURCE: U.S. Department of Education, National Center for Education Statistics, Integrated Postsecondary Education Data System, "Salaries, Tenure, and Fringe Benefits of Full-Time Instructional Faculty Survey" (IPEDS-SA:1998–99).

over $9,000 more per year than those in 2-year institutions. Those faculty in the academic ranks of professor, associate professor, and assistant professor had higher average salaries in 4-year institutions than in 2-year institutions; while those faculty in the ranks of instructor and lecturer, as well as those with no academic rank, had higher average salaries in 2-year than in 4-year institutions (figure B).*

For all ranks combined, average salaries in 2-year public institutions were $10,300 higher than those in 2-year private not-for-profit institutions. When examined by academic rank, the difference was about $20,300 for professors, about $12,200 for associate professors, and about $9,300 for assistant professors.

The states with the highest salaries for full-time instructional faculty on 9- and 10-month contracts in public institutions were California, Connecticut, Delaware, and New Jersey, with average salaries of over $60,000 per year. In contrast, the salaries of full-time instructional faculty on 9- and 10-month contracts in public institutions were lowest in North and South Dakota, with averages at or under $40,000 per year.

Average salaries for all faculty ranks combined were higher in private not-for-profit degree-granting institutions than in

*Graduate student teaching assistant and adjunct faculty are not reported in the categories of instructor, lecturer, or no academic rank. However, they are reported in the IPEDS "Fall Staff Survey."

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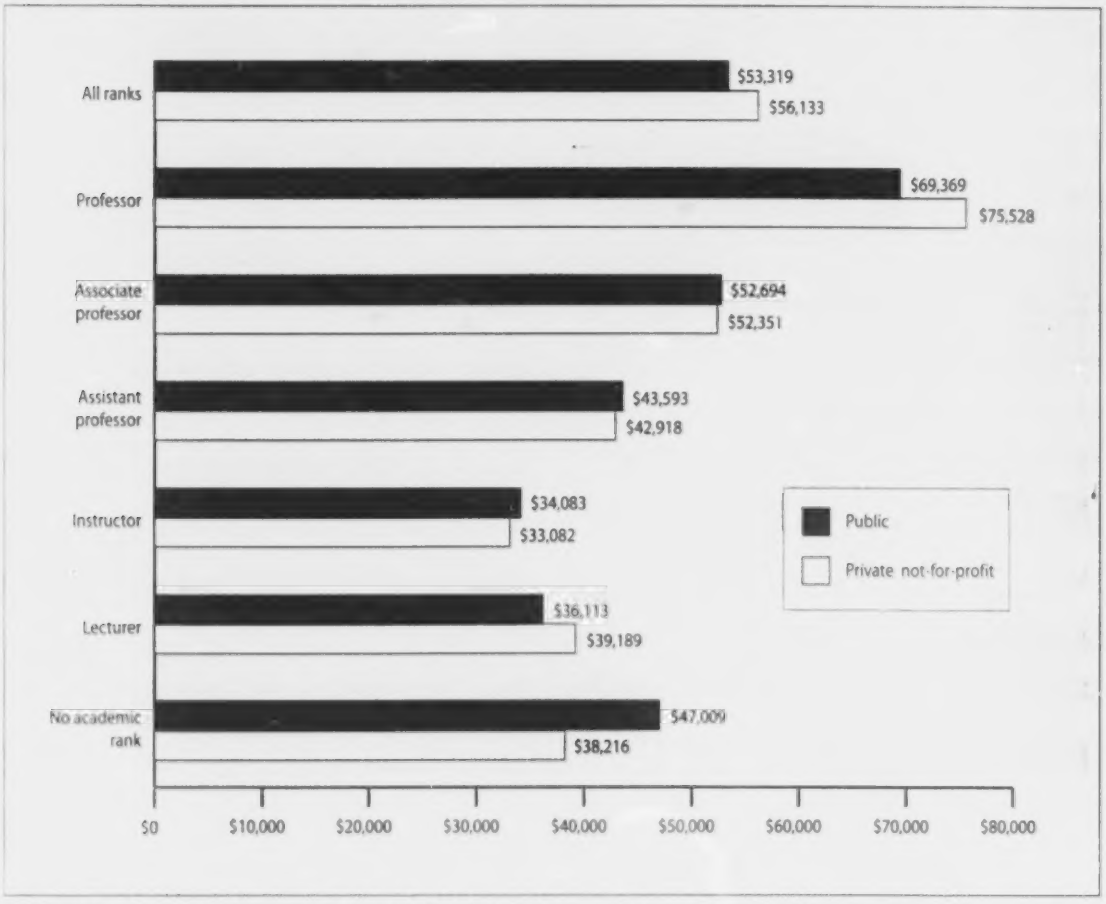
Figure C.—Average salaries of full-time instructional faculty on 9- and 10-month contracts in Title IV degree-granting institutions, by academic rank and control, 50 states and the District of Columbia: Academic year 1998–99

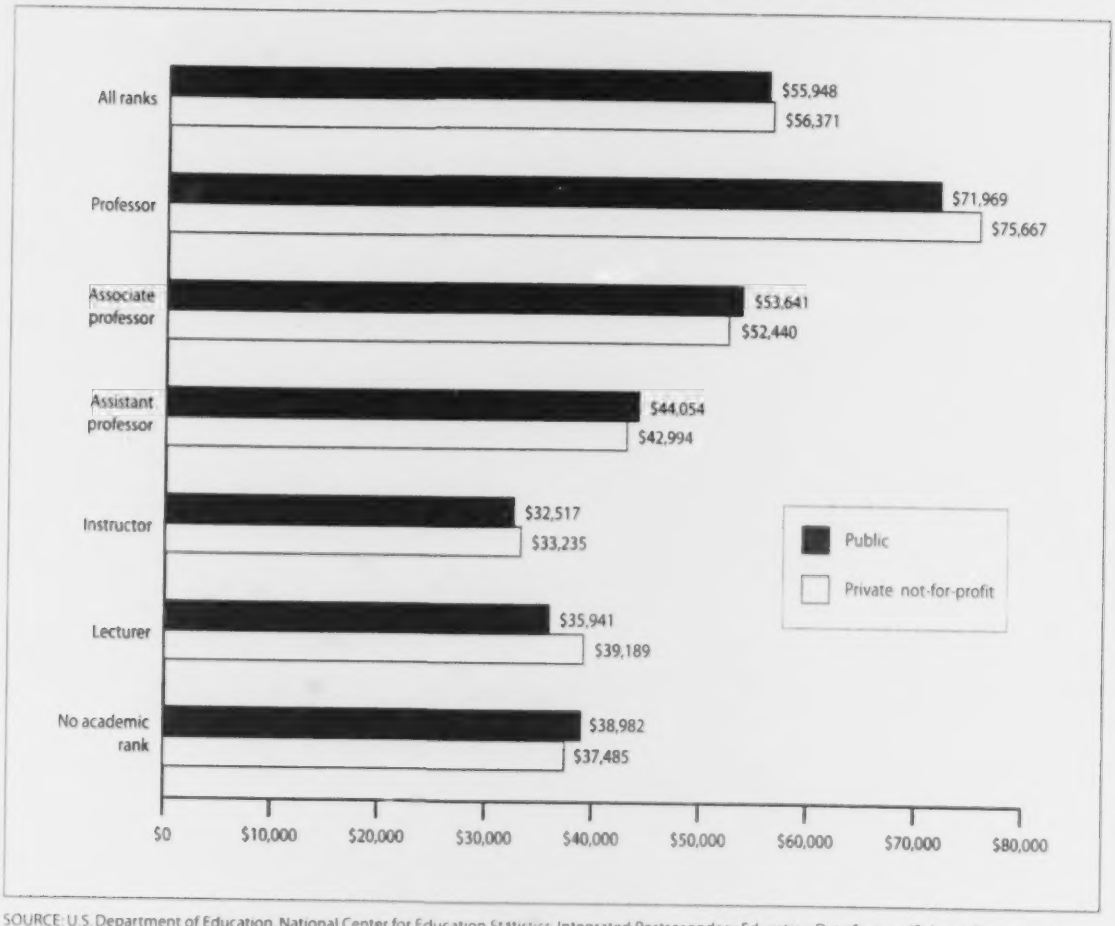


SOURCE: U.S. Department of Education, National Center for Education Statistics, Integrated Postsecondary Education Data System, "Salaries, Tenure, and Fringe Benefits of Full-Time Instructional Faculty Survey" (IPEDS-SA:1998–99).

public degree-granting institutions ($56,133 and $53,319, respectively) (figure C). Salaries in public 4-year institutions for all ranks combined were lower ($55,948) than in private not-for-profit 4-year institutions ($56,371). Average salaries for professors, instructors, and lecturers were lower in public 4-year institutions than in 4-year private not-for-profit institutions (figure D).

Among the states, average salaries for full-time instructional faculty in public 4-year degree-granting institutions were higher in California and New Jersey than in any other state. Louisiana, North Dakota, and South Dakota were the only states where full-time instructional faculty in public 4-year institutions earned an average salary of less than $45,000.

Figure D.—Average salaries of full-time instructional faculty on 9- and 10-month contracts in 4-year Title IV degree-granting institutions, by academic rank and control, 50 states and the District of Columbia: Academic year 1998–99



SOURCE: U.S. Department of Education, National Center for Education Statistics, Integrated Postsecondary Education Data System, "Salaries, Tenure, and Fringe Benefits of Full-Time Instructional Faculty Survey" (IPEDS-SA:1998–99).

Data source: The NCES Integrated Postsecondary Education Data System "Salaries, Tenure, and Fringe Benefits of Full-Time Instructional Faculty Survey" (IPEDS-SA:1998–99).

For technical information, see the complete report:

Fernandez, R.M. (2000). *Salaries and Tenure of Full-Time Instructional Faculty on 9- and 10-Month Contracts: 1998–1999* (NCES 2001–181).

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To obtain the complete report (NCES 2001–181), visit the NCES Web Site *(http://nces.ed.gov).*

State Library Agencies: Fiscal Year 1999
P. Elaine Kroe 59

State Library Agencies: Fiscal Year 1999

P. Elaine Kroe

This article was originally published as the Introduction and Highlights of the E.D. Tabs report of the same name. The universe data are from the State Library Agencies (StLA) Survey.

Introduction

This report contains data on state library agencies in the 50 states and the District of Columbia for state fiscal year (FY) 1999. The data were collected through the State Library Agencies (StLA) Survey, the product of a cooperative effort between the Chief Officers of State Library Agencies (COSLA), the U.S. National Commission on Libraries and Information Science (NCLIS), the National Center for Education Statistics (NCES), and the U.S. Census Bureau. The FY 99 StLA Survey is the sixth in the series.

Background

A state library agency is the official agency of a state that is charged by state law with the extension and development of public library services throughout the state and that has adequate authority under state law to administer state plans in accordance with the provisions of the Library Services and Technology Act (LSTA) (P.L. 104–208). Beyond these two roles, state library agencies vary greatly. They are located in various departments of state government and report to different authorities. They are involved in various ways in the development and operation of electronic information networks. They provide different types of services to different types of libraries.

State library agencies are increasingly receiving broader legislative mandates affecting libraries of all types in the states (i.e., public, academic, school, special, and library systems). State library agencies provide important reference and information services to state governments and administer the state libraries and special operations, such as state archives, libraries for the blind and physically handicapped, and the State Center for the Book.[1] The state library agency may also function as the state's public library at large, providing library services to the general public. This report provides information on the range of roles played by state library agencies and the various combinations of fiscal, human, and informational resources invested in such work.

Purpose of survey

The purpose of the StLA Survey is to provide state and federal policymakers, researchers, and other interested users with descriptive information about state library agencies. The data collected are useful to (1) chief officers of state library agencies, (2) policymakers in the executive and legislative branches of federal and state governments, (3) government and library administrators at federal, state, and local levels, (4) the American Library Association and its members or customers, and (5) library and public policy researchers. The survey asks each state library agency about the kinds of services it provides, its staffing practices, its collections, income and expenditures, and more. Decision-makers use this NCES survey to obtain information about services and fiscal practices.

The StLA Survey collects data on state library agency services and financial assistance to public, academic, and school libraries, and to library systems. When added to the data collected through the NCES surveys of public, academic, and school libraries, and library cooperatives, these data help complete the national picture of library service.

[1]The State Center for the Book, which is part of the Center for the Book program sponsored by the Library of Congress, promotes books, reading, and literacy, and is hosted or funded by the state.

Congressional authorization

The StLA Survey is conducted in compliance with the NCES mission "to collect, analyze, and disseminate statistics and other information related to education in the United States and in other nations, including . . . the learning and teaching environment, including data on libraries . . ." (P.L. 103–382, Title IV, National Education Statistics Act of 1994, Sec. 404 [a]).

Highlights

Governance

Nearly all state library agencies (47 states and the District of Columbia) are located in the executive branch of government. Of these, almost two-thirds are part of a larger agency, most commonly the state department of education. In three states (Arizona, Michigan, and Tennessee), the agency is located in the legislative branch.

Allied and other special operations

A total of 14 state library agencies reported having one or more allied operations. Allied operations most frequently linked with a state library agency are the state archives (10 states) and the state records management service (10 states). Sixteen state library agencies contract with public or academic libraries in their states to serve as resource or reference/information service centers. Eighteen state library agencies host or provide funding for a State Center for the Book.

Electronic services and information

Internet access. All state library agencies facilitate library access to the Internet in one or more of the following ways: training or consulting library staff in the use of the Internet; providing a subsidy for Internet participation; providing equipment to access the Internet; providing access to directories, databases, or online catalogs; and managing gopher/Web sites, file servers, bulletin boards, or listservs. Forty-eight state library agencies have Internet workstations available for public use, ranging in number from 2 to 4 (22 states); 5 to 9 (13 states); 10 to 19 (5 states); 20 to 29 (5 states); and 30 or more (3 states). Louisiana reported the largest number of public-use Internet terminals (49). Thirty-six state library agencies were applicants to the Universal Service (E-rate discount) Program established by the Federal Communications Commission (FCC)[2] under the Telecommunications Act of 1996 (P.L. 104–104).

Electronic networks, databases, and catalogs. State library agencies in 49 states and the District of Columbia plan or monitor electronic network development; 45 of these agencies operate electronic networks and 46 of these agencies develop network content (i.e., database development).[1] Forty-seven state library agencies provide or facilitate library access to online databases through subscription, lease, license, consortial membership, or agreement. Forty-seven state library agencies reported combined expenditures of over $25.4 million for statewide database licensing. Of these, Michigan had the highest expenditure ($3.1 million) and Louisiana the lowest ($6,000). Over two-thirds of the state library agencies reporting such expenditures provided statewide database licensing services to public, academic, school, and special libraries, and to library cooperatives, with public libraries served most frequently (47 states). Other state agencies and remote users were also served by over two-thirds of the state library agencies reporting such expenditures. Almost all state library agencies facilitate or subsidize electronic access to the holdings of other libraries in their state, most frequently through Online Computer Library Center (OCLC) participation (41 states and the District of Columbia). Over half provide access via a Web-based union catalog (30 states) or Telnet gateway (28 states).

Library development services

Services to public libraries. Every state library agency provides the following types of services to public libraries: administration of Library Services and Technology Act (LSTA) grants, collection of library statistics, continuing education programs, and library planning, evaluation, and research. Nearly every state library agency provides consulting services, library legislation preparation or review, and review of technology plans for the Universal Service (E-rate discount) Program. Services to public libraries provided by at least three-quarters of state library agencies include administration of state aid, interlibrary loan referral services, literacy program support, reference referral services, state standards or guidelines, statewide public relations or library promotion campaigns, and summer reading program support. At least three-fifths of state library agencies provide OCLC Group Access Capability (GAC) and union list development. Less common services to public libraries include accreditation of libraries, certification of librarians, cooperative purchasing of library materials, preservation/conservation services, and retrospective conversion of bibliographic records.

[1] Network content refers to database development. Database development activities may include the creation of new databases or the conversion of existing databases into electronic format. These activities may involve bibliographic databases as well as full text or data files.

[2] Under this program, the FCC promotes affordable access to the Internet and the availability of Internet services to the public, with special attention given to schools and libraries.

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Services to academic libraries. At least two-thirds of state library agencies provide the following services to the academic library sector: administration of LSTA grants, continuing education, interlibrary loan referral services, and reference referral services. Less common services to academic libraries include cooperative purchasing of library materials, literacy program support, preservation/conservation, retrospective conversion, and state standards or guidelines. No state library agency accredits academic libraries; only Washington State certifies academic librarians.

Services to school library media centers. At least two-thirds of state library agencies provide the following services to school library media centers (LMCs): administration of LSTA grants, continuing education, interlibrary loan referral services, and reference referral services. Over half of all state library agencies provide consulting services to LMCs. Less common services to LMCs include administration of state aid, cooperative purchasing of library materials, preservation/conservation, retrospective conversion, state standards or guidelines, and Universal Service (E-rate discount) Program review. No state library agency accredits LMCs or certifies LMC librarians.

Services to special libraries. Over two-thirds of state library agencies serve special libraries[4] through administration of LSTA grants, consulting services, continuing education, interlibrary loan referral, and reference referral. Less common services to special libraries include administration of state aid, cooperative purchasing of library materials, state standards or guidelines, and summer reading program support. Only Nebraska accredits special libraries and only Indiana, Nebraska, and Washington State certify librarians of special libraries.

Services to systems. At least three-fifths of state library agencies serve library systems[5] through administration of LSTA grants, consulting services, continuing education, interlibrary loan referral, library legislation preparation or review, and library planning, evaluation, and research. Accreditation of library systems is provided by only six states, and certification of systems librarians by only five states.

Service outlets

State library agencies across the United States reported a total of 128 service outlets—54 main or central outlets, 65 other outlets (excluding bookmobiles), and 9 bookmobiles. Outlets serving the general public or state government employees were open an average of 34 hours per week.

Collections

The number of books and serial volumes held by state library agencies totaled 22.2 million, with New York accounting for the largest collection (2.4 million). Six state library agencies had book and serial volumes of over one million. In other states, collections ranged from 500,000 to one million (10 states); 200,000 to 499,999 (13 states); 100,000 to 199,999 (7 states); 50,000 to 99,999 (6 states); and under 50,000 (7 states). The state library agency in Maryland does not maintain a collection, and the District of Columbia does not maintain a collection in its function as a state library agency.[6]

The number of serial subscriptions held by state library agencies totaled over 100,000,[7] with New York, California, and Indiana holding the largest number (about 11,000 each). Six state library agencies reported serial subscriptions of over 5,000. In other states, these collections ranged from 2,000 to 4,999 (5 states); 1,000 to 1,999 (11 states); 500 to 999 (13 states); 100 to 499 (11 states); and under 100 (3 states). The state library agencies in Maryland and the District of Columbia do not maintain collections.

Staff

The total number of budgeted full-time equivalent (FTE) positions in state library agencies was 3,848. Librarians with American Library Association-Master of Library Science (ALA-MLS) degrees accounted for 1,209 of these positions, or 31.4 percent of total FTE positions. Rhode Island reported the largest percentage (55.0 percent) of ALA-MLS librarians, and Virginia reported the smallest (12.7 percent).

[4] A special library is a library in a business firm, professional association, government agency, or other organized group; a library that is maintained by a parent organization to serve a specialized clientele; or an independent library that may provide materials or services, or both, to the public, a segment of the public, or other libraries. The scope of collections and services is limited to the subject interests of the host or parent institution. Special libraries include libraries in state institutions.

[5] A system is a group of autonomous libraries joined together by formal or informal agreements to perform various services cooperatively, such as resource sharing or communications. Systems include multitype library systems and public library systems, but not multiple outlets under the same administration.

[6] In Maryland, Enoch Pratt Central, the central library of the Enoch Pratt Free Library is designated by state law as the State Library Resource Center. In the District of Columbia, the Martin Luther King Memorial Library, the central library of the District of Columbia Public Library, functions as a resource center for the municipal government.

[7] The total number of serial titles is counted, including duplicates.

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Income

State library agencies reported a total income of $949.0 million in FY 99 (83.7 percent from state sources, 14.5 percent from federal sources, and 1.8 percent from other sources).[8] State library agency income from state sources totaled $794.3 million, with 69.4 percent ($551 million) designated for state aid to libraries. In 11 states, over 75 percent was designated for state aid to libraries, with Massachusetts having the largest percentage (96.2 percent). Seven states (Hawaii, Idaho, Iowa, New Hampshire, South Dakota, Vermont, and Wyoming) and the District of Columbia targeted no state funds for aid to libraries.[9] Federal income totaled $137.5 million, with 87.1 percent from the LSTA.

Expenditures

State library agencies reported total expenditures of $949.6 million in FY 99. The largest percentage (83.6 percent) was from state funds, followed by federal funds (14.8 percent), and other funds (1.7 percent).

In five states, over 90 percent of total expenditures were from state sources. These states were Massachusetts (94.0 percent), Maryland (92.5 percent), New York (92.3 percent), Pennsylvania (90.7 percent), and Georgia (90.4 percent). The District of Columbia had the smallest percentage of expenditures from state sources (49.4 percent), followed by Utah (57.8 percent).

[8]Federal income includes State Program income under the Library Services and Technology Act (LSTA) (P.L. 104–208), income from Titles I to III of the Library Services and Construction Act (LSCA) (P.L. 101–254), and other federal income. Note: LSCA was superseded by LSTA, but some LSCA funds are still unspent.

[9]The District of Columbia Public Library functions as a state library agency and is eligible for federal LSTA funds in this capacity. The state library agency in Hawaii is associated with the Hawaii State Public Library System and operates all public libraries within its jurisdiction. The state funds for aid to libraries for these two agencies are reported on the NCES Public Libraries Survey, rather than on the StLA survey, because of the unique situation of these two state agencies, and in order to eliminate duplicative reporting of these data.

Financial assistance to libraries accounted for 68.2 percent of total expenditures of state library agencies, with the largest percentages expended on individual public libraries (43.5 percent) and public library systems (23.6 percent). Most of the expenditures for financial assistance to libraries were from state sources (87.0 percent), with 12.7 percent from federal sources.

Thirteen state library agencies reported expenditures for allied operations. These expenditures totaled almost $25.0 million and accounted for 2.6 percent of total expenditures. Of states reporting such expenditures, Virginia had the highest expenditure ($7.4 million) and Kansas the lowest ($146,000).[10]

Thirty-one state library agencies had a total of $20.6 million in grants and contracts expenditures to assist public libraries with state education reform initiatives or the National Education Goals. The area of lifelong learning accounted for the largest proportion of such expenditures (48.5 percent), followed by the areas of adult literacy (31.7 percent) and readiness for school (19.8 percent). Expenditures were focused exclusively on readiness for school projects in three states (Minnesota, Pennsylvania, and Vermont); on adult literacy in two states (New Jersey and Oklahoma); and on lifelong learning in two states (Alabama and Ohio).

[10]Although Alaska reported allied operations, the expenditures were not from the state library agency budget.

Data source: NCES State Library Agencies (StLA) Survey, Fiscal Year 1999.

For technical information, see the complete report:

Kroe, P. E. (2000). *State Library Agencies: Fiscal Year 1999* (NCES 2000–374).

Author affiliation: P.E. Kroe, NCES.

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To obtain the complete report (NCES 2000–374), visit the NCES Web Site *(http://nces.ed.gov)*.

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Mathematics and Science in the Eighth Grade: Findings From the Third International Mathematics and Science Study
Trevor Williams, Dan Levine, Leslie Jocelyn, Patricia Butler, Camilla Heid, and Jacqueline Haynes 63

Mathematics and Science in the Eighth Grade: Findings From the Third International Mathematics and Science Study

Trevor Williams, Dan Levine, Leslie Jocelyn, Patricia Butler, Camilla Heid, and Jacqueline Haynes

This article was originally published as Chapter 5 of the Statistical Analysis Report of the same name. The sample survey data are from the Third International Mathematics and Science Study (TIMSS).

Introduction

The United States was one of 41 nations participating in the 1995 Third International Mathematics and Science Study (TIMSS), the latest in a series of international studies coordinated by the International Association for the Evaluation of Educational Achievement (IEA). Participation by the United States in TIMSS was funded and directly supported by the U.S. Department of Education's National Center for Education Statistics (NCES) and the National Science Foundation (NSF).

Like most IEA studies developed over the past 30 years, TIMSS is first and foremost about achievement and secondarily about instruction and curriculum. The core collection activity of TIMSS for most nations was surveys of national samples of students, their teachers, and their schools. Measures of the achievement of students and of the instructional practices of their teachers made up the bulk of the surveys and are the substance of the analyses presented in this report. The primary intent of these analyses is to portray the place of the United States among the 41 TIMSS nations in terms of U.S. eighth-graders' performance in mathematics and science. Secondarily, the report describes the instructional practices of the teachers of these eighth-graders with a view to offering a context for why U.S. students show the levels of performance that they do.

Student Achievement

In determining the U.S. international standing among the TIMSS nations, the analyses identified countries whose average levels of achievement were significantly higher than, significantly lower than, and not significantly different from the United States. The findings are as follows: From the perspective of relative standing in mathematics, the United States is not among the top 50 percent of nations. U.S. eighth-graders, on average, turn in scores that place them lower than their peers in 20 other nations and lower than the overall international average (figure A). U.S. students do better than their peers in 7 countries, and their performance is indistinguishable from that of students in 13 other nations. This performance places the United States at a distance from the goal of being first in the world by the year 2000.

Figure A.—Average mathematics and science achievement of eighth-grade students,* by nation: 1995

Mathematics		Science	
Total score		Total score	
Nation	Mean	Nation	Mean
Singapore	643	Singapore	607
Korea	607	Czech Republic	574
Japan	605	Japan	571
Hong Kong	588	Korea	565
Belgium (Fl)	565	*Bulgaria*	565
Czech Republic	564	*Netherlands*	560
Slovak Republic	547	Slovenia	560
Switzerland	545	*Austria*	558
Netherlands	541	Hungary	554
Slovenia	541	England	552
Bulgaria	540	Belgium (Fl)	550
Austria	539	*Australia*	545
France	538	Slovak Republic	544
Hungary	537	Russian Federation	538
Russian Federation	535	Ireland	538
Australia	530	Sweden	535
Ireland	527	UNITED STATES	534
Canada	527	*Germany*	531
Belgium (Fr)	526	Canada	531
Thailand	522	Norway	527
Israel	522	New Zealand	525
Sweden	**519**	*Thailand*	525
Germany	509	*Israel*	524
New Zealand	508	Hong Kong	522
England	506	Switzerland	522
Norway	503	*Scotland*	517
Denmark	502	Spain	517
UNITED STATES	500	France	498
Scotland	498	*Greece*	497
Latvia (LSS)	493	Iceland	494
Spain	487	*Romania*	486
Iceland	487	Latvia (LSS)	485
Greece	484	Portugal	480
Romania	482	*Denmark*	478
Lithuania	477	Lithuania	476
Cyprus	474	*Belgium (Fr)*	471
Portugal	454	Iran, Islamic Republic	470
Iran, Islamic Republic	428	Cyprus	463
Kuwait	392	*Kuwait*	430
Colombia	385	*Colombia*	411
South Africa	354	*South Africa*	326
International mean	**513**		**516**
U.S. mean	▼		▲

▲ Significantly higher than international mean

▼ Significantly lower than international mean

■ Not significantly different from international mean

Country mean significantly higher than U.S. mean

Country mean not significantly different from U.S. mean

Country mean significantly lower than U.S. mean

*Students tested were in the upper grade of the adjacent paired grades that contained the most students who were 13 years old at the time of testing. In the United States and most other nations, that grade was the eighth grade.

NOTE: Nations not meeting international sampling guidelines shown in italics. The French-speaking (Belgium-Fr) and the Flemish-speaking (Belgium-Fl) populations of Belgium were sampled separately. Latvia (LSS) indicates only the Latvian-speaking schools were sampled. For mathematics, Sweden may appear out of place; however, statistically its placement is correct.

SOURCE: Boston College, TIMSS International Study Center: (1996) *Mathematics Achievement in the Middle School Years*, table 1.1; and *Science Achievement in the Middle School Years*, table 1.1. (Previously published as figure 2-3 on p. 27 of the complete report from which this article is excerpted.)

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However, U.S. eighth-graders do better at science. They outperform their peers in 15 nations, are the equal of students in a further 16 countries, and are outpaced by students in 9 countries—Singapore, the Czech Republic, Japan, Korea, Bulgaria, the Netherlands, Slovenia, Austria, and Hungary. While not exactly first in the world in science either, U.S. eighth-graders are ahead of the international average and do better than students in more than one-third of the participating nations.

In mathematics, 5 percent of U.S. eighth-graders make it into the top 10 percent of all students internationally (figure B). They are similarly underrepresented in the top 25 percent and the top 50 percent of TIMSS students, with 18 percent and 45 percent, respectively, making these cutoffs. By the criterion applied here, one-half of the U.S. top 10 percent get into the world top 10 percent. In contrast, U.S. eighth-graders are overrepresented among the world's best in science. Thirteen percent make it into the top 10 percent internationally (figure B), 30 percent qualify for the top 25 percent of students from all countries, and 55 percent are members of the top 50 percent internationally.

With regard to the content-specific areas of mathematics and science, U.S. eighth-graders' performance is variable. In comparison to the international average, U.S. eighth-graders are below average on *geometry*, *measurement*, and *proportionality*; about average on *fractions and number sense* and *algebra*; and above average on *data representation, analysis and probability*. In the case of science, fewer countries do better than the United States in the areas of *earth science*, *life science*, and *environmental issues and the nature of science*. In *chemistry* and *physics*, the United States is about average.

There is no precise answer to the question of whether U.S. performance on TIMSS represents an improvement. In previous international studies the United States has not performed above the international average in mathematics. This fact, along with the evidence from TIMSS, suggests that U.S. middle school students probably have not improved much over the past 3 decades relative to the international average. In the case of science, the relative performance of U.S. students has never been above the average of all (participating) nations in other international studies; in all except TIMSS, the United States has been lower. However, the evidence of TIMSS suggests that U.S. eighth-graders may be doing a little better in science than they have in the past.

The performance of different sectors of the U.S. eighth-grade population varies considerably. Where the mathematics performance of white eighth-graders is at the international average and is lower than 12 of the 41 TIMSS nations, the performance of black and Hispanic eighth-graders places them below the international average and lower than more than 35 of the 41 TIMSS nations (figure C). In addition, students whose parents have low levels of education, those who are less well-off economically, students from immigrant families, those from non-English-speaking backgrounds, and students from "nontraditional" families also turn in lower levels of performance, in general. However, the performance of these population groups spans the performance range of all countries in mathematics. At the other end of the spectrum, population groups considered to be advantaged—students who are white, have college-educated parents, come from well-off families, live with both biological parents, and so on—do better. However, the overall pattern is that, for mathematics, they turn in a mean score not significantly different from the international average.

Where does the problem lie? TIMSS probably will not be able to offer definitive answers but, at the very least, it should be able to provide a context for understanding the results. Some of this information has already entered the public arena. Instructional practices have been implicated in the past, generating widespread efforts at reform. TIMSS offers evidence in this respect based on information from the 500 or so eighth-grade mathematics and science teachers who answered some 500 questions about their teaching and themselves. An overview of the findings follows.

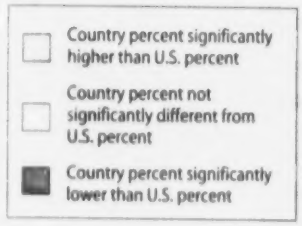
Teachers and Teaching

For the most part, U.S. eighth-grade mathematics and science teachers are white females in their early forties. Most of these teachers are employed full time, and they spend about one-third of their time on face-to-face teaching. The remainder is spent in roughly equal parts on teaching-related activities in and out of school—student supervision, individual curriculum planning, grading student work and tests, and the like. However, teachers' autonomy is limited, and such collegiality as exists is centered around curriculum planning.

On the whole, instructional practices differ little between eighth-grade mathematics and science classrooms in the United States. The majority of lessons begin with a review of the homework assigned in the last lesson, and most conclude with the assignment of homework for the next lesson. Teachers tend to emphasize rules and definitions as

Figure B.—Percentages of eighth-grade students* reaching the international top 10 percent in mathematics and science, by nation: 1995

Mathematics		Science	
Nation	Percent	Nation	Percent
Singapore	45	Singapore	31
Korea	34	*Bulgaria*	21
Japan	32	Czech Republic	19
Hong Kong	27	Japan	18
Czech Republic	18	Korea	18
Belgium (Fl)	17	England	17
Bulgaria	16	*Austria*	16
Slovak Republic	12	*Australia*	16
Austria	11	Hungary	14
Hungary	11	Slovenia	14
Slovenia	11	UNITED STATES	13
Australia	11	*Netherlands*	12
Switzerland	11	Slovak Republic	12
Netherlands	10	Ireland	12
Russian Federation	10	*Germany*	11
Ireland	9	Russian Federation	11
Canada	7	*Israel*	11
Thailand	7	New Zealand	11
France	7	Belgium (Fl)	10
England	7	Sweden	9
Israel	6	Canada	9
New Zealand	6	*Scotland*	9
Germany	6	Norway	7
Belgium (Fl)	6	Switzerland	7
Sweden	5	Hong Kong	7
Scotland	5	*Romania*	5
UNITED STATES	5	Spain	4
Norway	4	Greece	4
Denmark	4	*Thailand*	4
Greece	3	*Denmark*	2
Romania	3	Iceland	2
Latvia (LSS)	3	Latvia (LSS)	2
Cyprus	2	Lithuania	1
Spain	2	France	1
Iceland	1	Cyprus	1
Lithuania	1	Belgium (Fr)	1
Portugal	0	Portugal	1
Colombia	0	*South Africa*	1
Iran, Islamic Republic	0	Iran, Islamic Republic	1
Kuwait	0	*Colombia*	0
South Africa	0	*Kuwait*	0


Country percent significantly higher than U.S. percent
Country percent not significantly different from U.S. percent
Country percent significantly lower than U.S. percent

*Students tested were in the upper grade of the adjacent paired grades that contained the most students who were 13 years old at the time of testing. In the United States and most other nations, that grade was the eighth grade.

NOTE: Nations not meeting international sampling guidelines shown in italics. The French-speaking (Belgium-Fr) and the Flemish-speaking (Belgium-Fl) populations of Belgium were sampled separately. Latvia (LSS) indicates only the Latvian-speaking schools were sampled. For science, Canada may appear out of place; however, statistically its placement is correct.

SOURCE: Boston College, TIMSS International Study Center: (1996) *Mathematics Achievement in the Middle School Years*, table 1.4; *Science Achievement in the Middle School Years*, table 1.4. (Excerpted from figures 2-5 and 2-7 on pp. 31 and 35 of the complete report from which this article is excerpted.)

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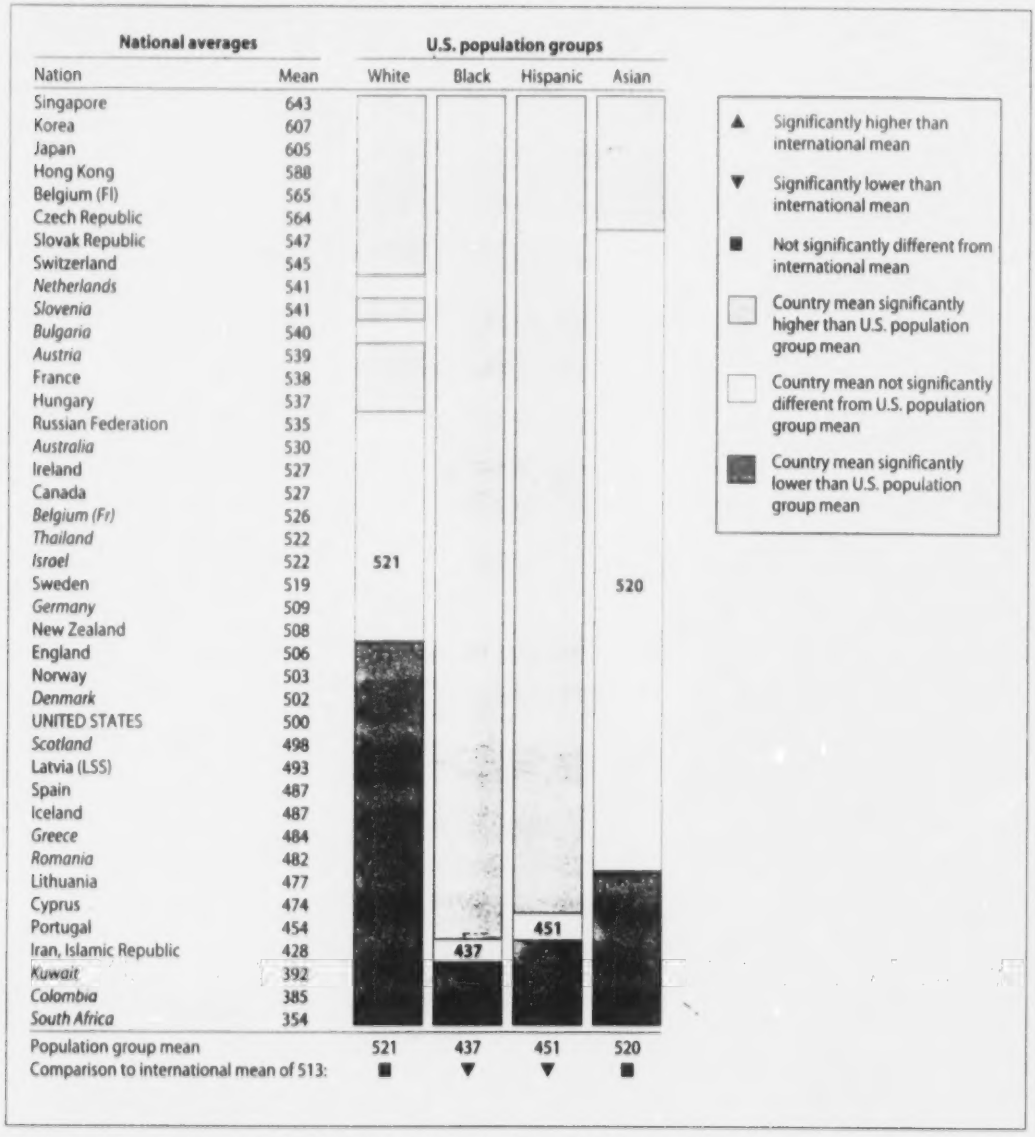
Figure C.—Comparisons of the average mathematics achievement of U.S. eighth-grade students, by race/ethnicity, to eighth-grade students* in other nations: 1995



*Students tested were in the upper grade of the adjacent paired grades that contained the most students who were 13 years old at the time of testing. In the United States and most other nations, that grade was the eighth grade.

NOTE: Nations not meeting international sampling guidelines shown in italics. Population group mean scores are shown in unshaded area in approximate position. The French-speaking (Belgium-Fr) and the Flemish-speaking (Belgium-Fl) populations of Belgium were sampled separately. The Netherlands and Bulgaria may appear out of place; however, statistically their placement is correct. Latvia (LSS) indicates only the Latvian-speaking schools were sampled.

SOURCE: Boston College, TIMSS International Study Center: (1996) *Mathematics Achievement in the Middle School Years*, table 1.1; U.S. Department of Education, National Center for Education Statistics, Third International Mathematics and Science Study (TIMSS), unpublished tabulations, 1995. (Previously published as figure 3-1 on p. 59 of the complete report from which this article is excerpted.)

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a way of introducing new topics. Students more frequently spend their time working as a whole class or independently, rather than working in pairs or small groups. Worksheets and textbooks, taking notes from the board, and practicing computational skills are also used often by teachers. Overall, then, the instructional activities described by teachers suggest that direct instruction models of teaching* dominate the teaching of mathematics and science in the eighth grade. The lessons begin by linking with what has gone before—previous lessons and previously assigned homework are reviewed as the basis for new content to come. In the second phase, the content of the current lesson is introduced and developed. In the third stage, students engage in independent work with a view to practicing the newly presented ideas and skills and, hence, reinforcing what was presented. In the fourth stage, further reinforcement activities are assigned as homework to be completed by the next lesson, where the homework will serve as the point of departure for a new cycle.

Ideally, one would like to link teachers' instructional practices to the achievement of students and, in this way, identify effective teachers and effective teaching practices. This is, in fact, what TIMSS set out to do. It is the principal reason for the emphasis on teaching behaviors in the teacher questionnaires and for the explicit linking of teachers to students that was part of the study design. The intent was to statistically link teachers' instructional practices to the average achievement levels of classrooms and, in this way, highlight effective instructional practices in each of the participating countries.

Such a linking is possible within the TIMSS data, but it is not a particularly fruitful exercise since the statistical relationships demonstrated suggest that instructional practices are only weakly related to classroom achievement in the aggregate. In the past, this fact has sometimes been interpreted to mean that teachers' instructional efforts have little effect on what students learn. This is an unfortunate conclusion to reach since the weak relationships are a function of the survey design. Students enter eighth grade with knowledge, beliefs, and orientations accumulated over 7 years of schooling and some 13 to 14 years of family life. What teachers do within the space of a school year is unlikely to radically alter the achievement level of the class as a whole and so create a sizable correlation between teacher instructional practices and student achievement at the classroom level. The best hope to demonstrate the relationship between teachers' instructional practices and student achievement is to look at the relationship to growth in achievement over the year, rather than absolute levels of achievement. Recognizing this, the original design of TIMSS was one that required a pre- and posttest to measure this growth. Unfortunately, most of the participating nations were unable to support both a pre- and a posttest, so the study reverted to a simple cross-sectional, single-testing design. As a result, the present analyses can offer no more than circumstantial evidence on what matters for the learning of mathematics and science.

Nevertheless, the study of instructional practices and their variation between countries is a study in its own right. It was identified as such in some of the design papers that contributed to the development of TIMSS; see, for example, Griffith, Owen, and Peak (1991) and Robitaille and Nicol (1993). The study of instructional practices offers, for example, an indication of where in the world U.S. proposals for instructional reform are already in effect, a notion of the extent of the variation in teaching practices within the United States and the other participating countries, the possibility of identifying patterns of practice and the way in which these vary across countries, and so on. This is the daily bread of a large number of those engaged in the study of teaching and the instruction of teachers.

Conclusion

Like all studies, TIMSS has strengths and limitations. The fact that it was possible to gain the consensus of some 41 nations about what should be assessed in mathematics and science, and what should be asked of students, teachers, and schools, should not go unremarked. When taken together with the efforts made to ensure international comparability of results through international standardization of measures, quality control procedures, strict adherence to reporting standards, and the timely release of the data into the public arena, TIMSS takes on the status of a unique international comparative study. As is often said, there is much to be learned from TIMSS, and much of this is yet to come. As the research community comes to grips with the potential within the TIMSS data, one would expect to see more and more information emerge to the benefit of those who teach mathematics and science, as well as those who think more abstractly about how it should be taught.

*In these models of teaching, the teacher is the expert on the subject matter and controls the flow of knowledge and information. The student is expected to learn the information and demonstrate mastery by reproducing the information in the same form that it was taught.

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Data source: The 1995 Third International Mathematics and Science Study (TIMSS).

For technical information, see the complete report:

Williams, T., Levine, D., Jocelyn, L., Butler, P., Heid, C., and Haynes, J. (2000). *Mathematics and Science in the Eighth Grade: Findings From the Third International Mathematics and Science Study* (NCES 2000–014).

For additional details on survey methodology, see

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Federal Support for Education: Fiscal Years 1980 to 2000
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Federal Support for Education: Fiscal Years 1980 to 2000

Charlene M. Hoffman

This article was excerpted from the Introduction and Highlights of the report of the same name. The data are primarily from the U.S. Office of Management and Budget, the U.S. Department of Education's Budget Service, the National Science Foundation, and the budget offices of other federal agencies.

Introduction

This report attempts to provide a comprehensive picture of total federal financial support for education since fiscal year (FY) 1980.[1] In addition to Department of Education programs, the many other federal programs that support education are included. The report also includes other types of federal support that are sometimes overlooked.

Categories of federal support

This report puts federal education funding into three categories: on-budget support, off-budget support, and nonfederal funds generated by federal programs.

On-budget funds are provided through programs funded by congressional appropriations. Although some consolidation of education programs in one federal agency was achieved with the establishment of the U.S. Department of Education in 1980, many large and significant federal education programs remain outside the Department. In addition, many federal programs involving education have other primary purposes. In order to account fully for all federal support for education, programs residing in other federal departments and agencies having significant educational components are included, even if they have additional purposes.

Off-budget support is federal money that has been excluded from the budget by law. Off-budget support in this report consists of the loan capital that is provided directly by the federal government under the William D. Ford Federal Direct Student Loan (FDSL) program.

Nonfederal funds generated by federal programs result from federal loan guarantees and interest subsidies to support loan capital raised through various private and public sources. Nonfederal funds are also made available for education purposes when federal programs require matching funds or offer incentives and subsidies. Almost all such nonfederal education funds go to postsecondary education.

[1] Some data have been revised from *Federal Support for Education: Fiscal Years 1980 to 1999* (Hoffman 2000) and *Digest of Education Statistics: 1999* (Snyder and Hoffman 2000). In addition to the data covering FY 80 to FY 2000, appendix tables in the full report include historical data from FY 65, FY 70, and FY 75.

Table A.—Federal on-budget funds for education, by level or other educational purpose, and off-budget support and nonfederal funds generated by federal legislation: Fiscal years 1980, 1985, 1990, and 2000

Level	FY 80	FY 85	FY 90	FY 2000[1]
	[In billions of **current** dollars]			
On-budget	$34.5	$39.0	$51.6	$90.7
Elementary and secondary	16.0	16.9	22.0	44.0
Postsecondary	11.1	11.2	13.7	19.9
Libraries, museums, and other	1.5	2.1	3.4	5.8
Research at educational institutions	5.8	8.8	12.6	21.0
Off-budget support and nonfederal funds[2]	4.9	8.7	11.2	32.1
Total	39.3	47.8	62.8	122.8
	[In billions of **constant** FY 2000 dollars]			
On-budget	$68.0	$57.5	$65.2	$90.7
Elementary and secondary	31.6	24.9	27.8	44.0
Postsecondary	21.9	16.4	17.2	19.9
Libraries, museums, and other	3.1	3.1	4.3	5.8
Research at educational institutions	11.4	13.0	15.9	21.0
Off-budget support and nonfederal funds[2]	9.6	12.8	14.1	32.1
Total	77.6	70.3	79.4	122.8

[1]Estimated.

[2]Off-budget support and nonfederal funds generated by federal legislation.

NOTE: Detail may not add to totals due to rounding.

SOURCE: U.S. Department of Education: Office of the Under Secretary, unpublished data, and National Center for Education Statistics, compiled from data appearing in U.S. Office of Management and Budget, *Budget of the United States Government*, fiscal years (FY) 1982–2001 (selected years); National Science Foundation, *Federal Funds for Research and Development*, FY 1980–2000 (selected years); and unpublished data obtained from various federal agencies. (Originally published as an untitled table on p. iv of the complete report from which this article is excerpted.)

Federal tax expenditures

Education programs can be supported either by direct funding or by indirect funding mechanisms such as tax expenditures. In this report, federal tax expenditures include only reductions in tax revenue received by the federal government due to deductions, exemptions, and credits allowable in the tax code. Unless otherwise noted, tables and discussions of federal support in this report do not include federal tax expenditures.

Outlays versus appropriations or obligations

To the extent possible, outlays were used in this report rather than appropriations or obligations, with the exception that obligations were used for academic research at institutions of higher education. Outlays are the actual amount of dollars spent. Appropriations are the amount of funds made available in legislation providing funds for federal programs. Obligations are spending commitments by the federal government that will require outlays either immediately or in the future.

Highlights

The federal government provides support for education well beyond programs funded through the Department of Education. Federal support for education, excluding estimated federal tax expenditures, was an estimated $122.8 billion in FY 2000 (table A), an increase of $60.0 billion, or 95 percent, since FY 90. After adjustment for inflation, federal support for education increased 55 percent between FY 90 and FY 2000.

For FY 2000, on-budget federal funds for education programs were estimated to be $90.7 billion, an increase of 76 percent since FY 90 in current dollars[2] or an increase of 39 percent after being adjusted for inflation. Off-budget support and nonfederal funds generated by federal legislation (predominantly postsecondary education loans) were

[2]Current dollars are amounts that have not been adjusted for inflation. Constant dollars are amounts that have been adjusted by means of price indexes to eliminate inflationary factors and allow direct comparison across years. In this report, constant dollars were computed based on the federal funds composite deflator from the U.S. Office of Management and Budget (OMB 2000). The inflation index rose 97.2 percent between FY 80 and FY 2000.

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Table B.—Funds provided by fiscal year 2000's largest providers of federal on-budget funds for education, by agency: Fiscal years 1980, 1985, 1990, and 2000

Agency	FY 80	FY 85	FY 90	FY 2000*
	[In billions of **current** dollars]			
Dept. of Education	$13.1	$16.7	$23.2	$40.7
Dept. of Health and Human Services	5.6	5.3	8.0	16.5
Dept. of Agriculture	4.6	4.8	6.3	10.8
Dept. of Labor	1.9	1.9	2.5	4.5
Dept. of Defense	1.6	3.1	3.6	4.0
Dept. of Energy	1.6	2.2	2.6	3.9
National Science Foundation	0.8	1.1	1.6	2.9
National Aeronautics and Space Administration	0.3	0.5	1.1	2.2
Dept. of Veterans Affairs	2.4	1.3	0.8	1.6
	[In billions of **constant** FY 2000 dollars]			
Dept. of Education	$25.9	$24.6	$29.3	$40.7
Dept. of Health and Human Services	11.1	7.8	10.1	16.5
Dept. of Agriculture	9.0	7.0	7.9	10.8
Dept. of Labor	3.7	2.9	3.2	4.5
Dept. of Defense	3.1	4.6	4.6	4.0
Dept. of Energy	3.2	3.3	3.2	3.9
National Science Foundation	1.6	1.7	2.0	2.9
National Aeronautics and Space Administration	0.5	0.7	1.4	2.2
Dept. of Veterans Affairs	4.6	1.9	1.0	1.6

*Estimated.

SOURCE: U.S. Department of Education: Office of the Under Secretary, unpublished data, and National Center for Education Statistics, compiled from data appearing in U.S. Office of Management and Budget, *Budget of the United States Government*, fiscal years (FY) 1982–2001 (selected years); National Science Foundation, *Federal Funds for Research and Development*, FY 1980–2000 (selected years); and unpublished data obtained from various federal agencies. (Originally published as an untitled table on p. iv of the complete report from which this article is excerpted.)

estimated at $32.1 billion, a rise of 187 percent in current dollars between FY 90 and FY 2000 and 127 percent in constant dollars.

Support from on-budget program funds

Between FY 80 and FY 2000, after being adjusted for inflation, federal on-budget program funds for elementary and secondary education[3] increased 39 percent; postsecondary education funds declined 9 percent; other education funds (which include funds for libraries, museums, cultural activities, and miscellaneous research) increased 89 percent; and funds for research at universities and university-administered research and development centers increased 84 percent.

Between FY 90 and FY 2000, federal on-budget funds for elementary and secondary education increased 58 percent in constant dollars, postsecondary education funds increased 15 percent, other education funds increased 35 percent, and research funds at colleges and universities increased 32 percent.

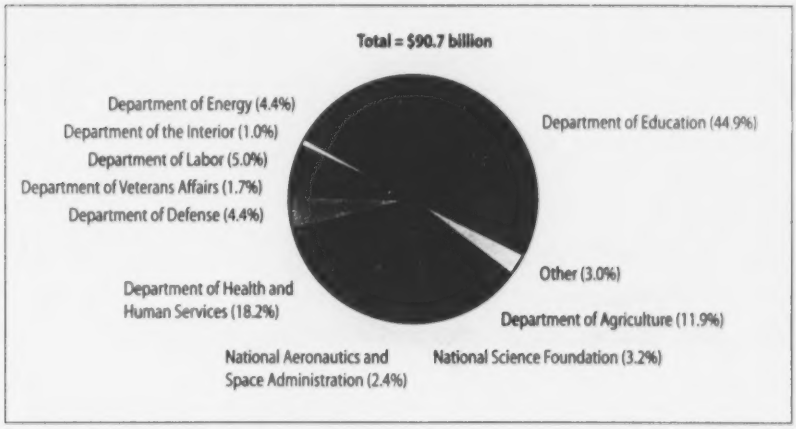
In FY 2000, Department of Education outlays totaled an estimated $40.7 billion (table B), reflecting an increase of 57 percent after being adjusted for inflation from FY 80 and an increase of 39 percent between FY 90 and FY 2000. The Department of Education's share of total federal on-budget education funds rose from 38 percent in FY 80 to 45 percent in FY 90 and FY 2000 (figure A).

Estimates of federal tax expenditures

Between FY 80 and FY 2000, estimated federal tax expenditures, after being adjusted for inflation, increased 50 percent. Between FY 90 and FY 2000, they went up 64 percent. Estimated federal tax expenditures' share of total federal support in education was 24 percent in FY 2000.

[3]In this report, elementary and secondary education programs include adult and vocational education programs in the U.S. Department of Education as well as other training programs, such as those in the U.S. Department of Labor (the Job Corps and other job training programs) and those in the U.S. Department of Veterans Affairs.

Figure A.—Percentage distribution of federal on-budget funds for education, by agency: Fiscal year 2000


Total = $90.7 billion
Department of Energy (4.4%)
Department of the Interior (1.0%)
Department of Labor (5.0%)
Department of Veterans Affairs (1.7%)
Department of Defense (4.4%)
Department of Health and Human Services (18.2%)
National Aeronautics and Space Administration (2.4%)
National Science Foundation (3.2%)
Department of Agriculture (11.9%)
Other (3.0%)
Department of Education (44.9%)

NOTE: Detail may not add to totals due to rounding.

SOURCE: U.S. Department of Education, National Center for Education Statistics, compiled from data appearing in U.S. Office of Management and Budget, *Budget of the United States Government*, fiscal year (FY) 2001; National Science Foundation, *Federal Funds for Research and Development*, FY 98, 99, and 2000; and unpublished data obtained from various federal agencies. (Originally published as figure 2 on p. 7 of the complete report from which this article is excerpted.)

Recipients of federal education support

Almost 60 percent of federal education support, excluding estimated federal tax expenditures, went to educational institutions in FY 2000. Another 19 percent was used for student support. The remaining 21 percent went to banks and other lending agencies, libraries, museums, and federal institutions.

Schools and colleges derived 11 percent of their FY 2000 revenues from the federal government, with the remaining revenues coming from state and local governments, individuals, and private organizations. Of the estimated $650.2 billion in direct expenditures by schools and colleges in FY 2000, revenues from federal sources amounted to $73.3 billion and revenues from other sources amounted to $576.9 billion.

The estimated federal share of expenditures of educational institutions declined from 14 percent in FY 80 to 10 percent in FY 90 and then increased to 11 percent in FY 2000. Among elementary and secondary educational institutions, the federal share declined from 12 percent in FY 80 to 7 percent in FY 90 and then increased to almost 9 percent in FY 2000. Among institutions of higher education, the federal share declined from 18 percent in FY 80 to 14 percent in FY 90 and then rose to 15 percent in FY 2000.

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U.S. Office of Management and Budget. (2000). *Budget of the United States Government, Fiscal Year 2001*. Washington, DC: U.S. Government Printing Office.

Data sources:

NCES: Common Core of Data (CCD); 1987 Integrated Postsecondary Education Data System, "Finance Survey" (IPEDS-F:FY 1987–98) (selected years); and unpublished tabulations.

Other: U.S. Office of Management and Budget, *Budget of the United States Government*, FY 1967–2001 editions (selected years); U.S. Department of Education, Office of the Under Secretary, Budget Service, unpublished data; National Science Foundation, *Federal Funds for Research and Development*, FY 1965–2000 editions (selected years); and various federal agencies, unpublished data.

For technical information, see the complete report:

Hoffman, C.M. (2000). *Federal Support for Education: Fiscal Years 1980 to 2000* (NCES 2000–068).

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To obtain the complete report (NCES 2000–068), visit the NCES Web Site *(http://nces.ed.gov)*.

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NAEP Scoring of Fourth-Grade Narrative Writing

Sheida White and Alan Vanneman

This article was originally published as a* NAEPfact. *The sample survey data are from the National Assessment of Educational Progress (NAEP) 1998 Writing Assessment.

Overview

The National Assessment of Educational Progress (NAEP) 1998 Writing Assessment measured student writing performance at the 4th, 8th, and 12th grades. Scoring guides for each grade allowed scorers to objectively evaluate students' work. This issue of *NAEPfacts* includes a 4th-grade narrative scoring guide, along with samples of student work at each of six levels of performance on the scoring guide.

Introduction

The *NAEP Writing Framework*, developed by the National Assessment Governing Board (NAGB 1997, pp. 5–11), set six overarching goals for the NAEP 1998 Writing Assessment:

- Students should write for a variety of purposes: *narrative*, *informative*, and *persuasive*.
- Students should write on a variety of tasks and for many different audiences.
- Students should write from a variety of stimulus materials and within various time constraints.
- Students should generate, draft, revise, and edit ideas and forms of expression in their writing.
- Students should display effective choices in the organization of their writing. They should include detail to illustrate and elaborate their ideas, and use appropriate conventions of written English.
- Students should value writing as a communicative activity.

Fourth-graders were given two writing topics, or "prompts," out of a possible 20 and were given 25 minutes to write on each. Each topic was classified according to purpose as

either *narrative*, *informative*, or *persuasive*. Three fourth-grade topics have been released to the public.[1]

Scoring guides were developed for each writing purpose. The guides established six levels of student performance for each writing purpose, ranging from "Unsatisfactory" to "Excellent."[2] This issue of *NAEPfacts* includes the complete text of the fourth-grade "narrative" scoring guide (figure 1), the complete text of a narrative prompt asking students to write a story about a magic castle, examples of student writing at each of the six levels in response to the "magic castle" prompt, and a discussion of how the scoring guide applies to the six student writing samples.

Focused Holistic Scoring

The scorers of the NAEP 1998 Writing Assessment used a scoring method described as "focused holistic scoring." This approach combines holistic and "primary trait" scoring. A strict holistic approach to the scoring of writing treats a writing task as a "springboard" for writing. A particular writing task is given to students as a stimulus to engage them and inspire them to write, and students' responses are scored in terms of the overall writing quality. The "primary trait" method of scoring writing, on the other hand, is concerned with how well students respond to a specific topic. For example, if students are asked to write about whether they like adventure movies, students who do not address the topic of adventure movies will receive lower scores than those who do.

The "focused holistic scoring" approach used by NAEP, as with all holistic approaches, requires scorers to rate the overall quality of the writing, regardless of how students choose to respond to specific aspects of a given topic. In contrast to some holistic approaches to writing scoring that offer very general guidelines, NAEP scorers were given detailed scoring guides that focused their attention on specific characteristics of students' writing (organization, development, syntax, and mechanics). In this sense, the "traits" of writing now at issue for NAEP scoring of writing have shifted from topic-related traits of student responses to traits associated with overall quality of writing.

The basic assumptions of the NAEP focused holistic scoring approach are that

- Each of the factors involved in writing is related to all others and that no one factor can be separated from the others.
- A writer is entitled to make some mistakes, given the 25-minute time limit, the lack of recourse to a dictionary, and the lack of time for reviewing and editing.
- Scorers should read each response as a whole—without focusing on each mistake (but still being aware of them)—to judge the level of writing ability demonstrated by the student.
- After thorough training on the scoring of responses written on a given task, scorers should quickly read an entire response and assign a score based on the total impression conveyed by the response.
- Scorers should ignore their personal standards of what constitutes good writing and embrace the criteria of the scoring guide.
- Scorers should read supportively rather than critically.

Narrative Writing

Narrative writing involves the production of stories or personal essays. Practice with these forms helps writers to develop a facility for spontaneous and colloquial language. Also, informative and persuasive writing can benefit from many of the strategies used in narrative writing. For example, there must be an effective ordering of events when relating an incident as part of a report.

Sometimes narrative writing contributes to an awareness of the world as the writer creates, manipulates, and interprets reality. Such writing—whether fact or fiction, poem, play, or personal essay—requires close observation of people, objects, and places. Further, this type of writing fosters creativity, imagination, and speculation by allowing the writer to express thoughts and then stand back, as a more detached observer might, and grasp more fully what is being felt and why. Thus, narrative writing offers a special opportunity to analyze and understand emotions and actions.

Fourth-grade students were given a number of narrative topics on the NAEP 1998 Writing Assessment. One of these topics asked students to write about a child encountering a castle that appears overnight as if by magic. The complete text of this topic is given below:

[1] The three topics are available in *The NAEP 1998 Writing Report Card for the Nation and the States* (Greenwald et al. 1999). Additional information is available from the "Sample Questions" section of the NAEP Home Page: *http://nces.ed.gov/nationsreportcard/ITMRLS/intro.shtml*

[2] The same basic guide was used for all three writing purposes, with some modifications.

Figure 1.—Fourth-grade narrative writing scoring guide

1. **Unsatisfactory response** (may be characterized by one or more of the following)
   - Attempts a response, but may only paraphrase the prompt or be extremely brief.
   - Exhibits no control over organization.
   - Exhibits no control over sentence formation; word choice is inaccurate across the response.
   - Characterized by misspellings, missing words, incorrect word order; errors in grammar, spelling, and mechanics severely impede understanding across the response.
2. **Insufficient response** (may be characterized by one or more of the following)
   - Attempts a response, but is no more than a fragment or the beginning of a story OR is very repetitive.
   - Is very disorganized OR too brief to detect organization.
   - Exhibits little control over sentence boundaries and sentence formation; word choice is inaccurate in much of the response.
   - Characterized by misspellings, missing words, incorrect word order; errors in grammar, spelling, and mechanics are severe enough to make understanding very difficult in much of the response.
3. **Uneven response** (may be characterized by one or more of the following)
   - Attempts to tell a story, but tells only part of a story, gives a plan for a story, or is list-like.
   - Lacks a clear progression of events; elements may not fit together or be in sequence.
   - Exhibits uneven control over sentence boundaries and may have some inaccurate word choices.
   - Errors in grammar, spelling, and mechanics sometimes interfere with understanding.
4. **Sufficient response**
   - Tells a clear story with little development; has few details.
   - Events are generally related; may contain brief digressions or inconsistencies.
   - Generally has simple sentences and simple word choice; may exhibit uneven control over sentence boundaries.
   - Has sentences that consist mostly of complete, clear, distinct thoughts; errors in grammar, spelling, and mechanics generally do not interfere with understanding.
5. **Skillful response**
   - Tells a clear story with some development, including some relevant descriptive details.
   - Events are connected in much of the response; may lack some transitions.
   - Exhibits some variety in sentence structure and exhibits some specific word choices.
   - Generally exhibits control over sentence boundaries; errors in grammar, spelling, and mechanics do not interfere with understanding.
6. **Excellent response**
   - Tells a well-developed story with relevant descriptive details across the response.
   - Events are well connected and tie the story together with transitions across the response.
   - Sustains varied sentence structure and exhibits specific word choices.
   - Exhibits control over sentence boundaries; errors in grammar, spelling, and mechanics do not interfere with understanding.

SOURCE: U.S. Department of Education, National Center for Education Statistics, (1999) *The NAEP 1998 Writing Report Card for the Nation and the States* (NCES 1999-462), p. 137.

Castle

One morning a child looks out the window and discovers that a huge castle has appeared overnight. The child rushes outside to the castle and hears strange sounds coming from it. Someone is living in the castle!

The castle door creaks open. The child goes in.

Write a story about who the child meets and what happens inside the castle.

In the imaginative stories written for this topic, "Castle," characters sometimes appear and disappear rather suddenly. Students who received ratings in the upper half of the six levels on the scoring guide ("Sufficient" or better) were able to weave coherent stories, making effective use of suspense and surprise.

1. Sample "Unsatisfactory" response

Student response: The child meet a castle and go in the castle.

The "Unsatisfactory" rating was given to 2 percent of the responses to this topic. As the scoring guide (figure 1) indicates, responses at this level tended either to be so brief that they did not develop a story at all, or to be hard to understand throughout. In the response shown, the student only paraphrases the topic.

2. Sample "Insufficient" response

Student response: One morning a child looks out a window and sees that a castle appears overnight. She runs to the castle and inside she meet a giant. The giant let her in. He asked her her name. He was married to another giant.

The "Insufficient" rating was given to 12 percent of the responses to this topic. In "Insufficient" responses, students produced only the beginning of a story, wrote very disorganized stories, or wrote responses that were understandable only in part. In the response shown, the student begins to tell a story, introducing a new character, the "giant," but does not progress beyond that point.

3. Sample "Uneven" response

Student response: He saw died fish when he walked in the door. Than he herd something a bat fly and turn in to a vampire. He ran out of the door yelling for help while running out the door. Then the vampire turned in to a bat again. And the boy never went there again. Then a year later a girl went there and opened the door and seen died fish at the door and seen a bat flying and than therd in to a vampire and yelled out the door yelling for help. And than the vampire turned in to a bat again. And it gos on on on on on on and on on on again.

The "Uneven" rating was given to 31 percent of the responses to this topic. In such responses, students attempted to tell an entire story, but the attempt was incomplete or disorganized. In the "Uneven" response shown, there is some dramatic action ("than he herd something a bat fly and turn in to a vampire"). That action, however, is repetitive, as the events are not connected to form a coherent story: "And than the vampire turned in to a bat again. And it gos on on on on on on and on on on again."

4. Sample "Sufficient" response

Student response: One day a 13 year old boy woke up and found beautiful castle with a purple, pink, red, blue, orange and yellow rainbow. He decided to get up. Then he got dressed and went to see what was in the castle. He walked to the door and knocked nobody answered so he knocked again still no answer.

Then the boy went in. It was pretty dark inside not like the outside of the color: He looked around and saw that there must be someone living here. It was very clean he could see that it was clean in the dark.

He went up stairs to a room and opened it and there he saw the ugly monster, and behind him was a pretty princess. He was in love. The princess was tide up.

The "Sufficient" rating was given to 38 percent of the responses to this topic. In such responses, students told complete stories that were organized and clear, but lacking in detail. In the "Sufficient" response, the student provides a clear but bare plot. He or she includes the vivid detail of the colors of the rainbow in the first sentence, but uses detail sparingly beyond that. Though the story does not conclude, enough action occurs that most of the development is clear. The simple, but essentially clear and correct, sentence structure and vocabulary are typical of responses at this level.

5. Sample "Skillful" response

Student response: First He sees a dark room filled with object some big and some small some short some tall. As he is reaching for the light switch something grabs his hand and turns it on for him. As it turns on the boy sees a woman so beautiful she captures his eyes. They look so much alike. They walk through the castle telling each other stories about each other showing each other pictures from there life. The girl says she had a long lost brother from long ago.

She says he looks like this and showed him the picture. The boy says he has a picture just like that of himself Then the girl realizes the boy in the picture is her long Lost Brother.

The "Skillful" rating was given to 14 percent of the responses to this topic. In such responses, students used details to develop their stories in parts of the response. They provided a good structure to their stories, though with occasional lack of transitions. In the sample "Skillful" response, the plot occasionally shifts abruptly, as when the boy "sees a woman" who looks like him and they suddenly start to "walk through the castle." Though the ending is concise, the student ties up the story with the revelation "Then the girl realizes the boy in the picture is her long Lost Brother."

6. Sample "Excellent" response

Student response: "Wow a castle!" said John. He had know clue of how it got here or where it came from? He walked inside and found that it was rather damp. He wandered around until finally he saw someone. This person didn't look normal. He was dressed in royalty with a purple cape and a crown of jewels. Then the person spoke out. "There you are you're supposed to be training right now." John had know clue what he was talking about. Suddenly he thought of something, was this the King of the castle? He finally got the nerve to ask a question. He asked "Who are you." He answered "I'm the King." John was shocked. Then the King told him to get on his armor. John thought and thought. Then he knew what he was talking about. He thought he was a knight. John thought again. If he was to be a knight then he would never see his family again. Then he thought of his older sister, Jennifer. He decided to be a knight. After about 2 months he– finally was knighted. He fought many dragons and man. He finally died but is still a legend today.
The End
By: Unknown

The "Excellent" rating was given to 3 percent of the responses to this topic. Such responses may have excelled through good development of plot, characters, or dialogue. In the response shown, the student uses dialogue effectively, develops characters, and provides a coherent plot. The student shows good control of language for a fourth-grader and includes vivid details about appearance—"He was dressed in royalty with a purple cape and a crown of jewels."

Conclusion

The scoring guides used in the NAEP 1998 Writing Assessment set six possible levels of writing performance for students, from "Unsatisfactory" to "Excellent." Among fourth-graders who wrote on the "Castle" narrative writing topic, 2 percent were rated "Unsatisfactory," 12 percent were rated "Insufficient," 31 percent were rated "Uneven," 38 percent were rated "Sufficient," 14 percent were rated "Skillful," and 3 percent were rated "Excellent."

Scoring guides, or "rubrics," are a widely used means of ensuring objective scoring of student work that requires a judgment of quality. Teachers using scoring guides in the classroom can use the guides not only to evaluate student work but also to explain to students where their work needs improvement.[1]

References

Greenwald, E.A., Persky, H.R., Campbell, J.R., and Mazzeo, J. (1999). *The NAEP 1998 Writing Report Card for the Nation and the States* (NCES 1999–462). U.S. Department of Education, National Center for Education Statistics. Washington, DC: U.S. Government Printing Office.

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[1]For more information on the use of scoring guides or rubrics, see Moskal (2000). The ERIC Clearinghouse has a discussion of rubrics, a bibliography, and additional links at *http://ericae.net/faqs/rubrics/scoring_rubrics.htm*

For technical information, see
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NAEP Scoring of Eighth-Grade Informative Writing

Sheida White and Alan Vanneman

This article was originally published as a* NAEPfact. *The sample survey data are from the National Assessment of Educational Progress (NAEP) 1998 Writing Assessment.

Overview

The National Assessment of Educational Progress (NAEP) 1998 Writing Assessment measured student writing performance at the 4th, 8th, and 12th grades. Scoring guides for three different writing purposes for each grade allowed scorers to objectively evaluate students' work. This issue of *NAEPfacts* includes an 8th-grade informative writing scoring guide, along with samples of student work at each of six levels of performance on the scoring guide.

Introduction

The *NAEP Writing Framework*, developed by the National Assessment Governing Board (NAGB 1997, pp. 5–11), determined that the NAEP 1998 Writing Assessment should require students in the 4th, 8th, and 12th grades to write for three different purposes: *narrative*, *informative*, and *persuasive*. Student performance would be evaluated on the basis of responses to a variety of different topics within each purpose.

Most students in the eighth grade received two writing topics, or "prompts," and were given 25 minutes to write on each, although some received a single 50-minute topic. Each topic was classified as either *narrative*, *informative*, or *persuasive*. Twenty-three different topics were used in the 8th-grade assessment: twenty 25-minute topics and three 50-minute topics. Three 25-minute topics have been released to the public.[1]

Student writing samples were assessed according to a scoring guide that established six levels of performance, ranging from "Unsatisfactory" to "Excellent."[2] This issue of *NAEPfacts* includes the complete text of the eighth-grade "informative" scoring guide (figure 1), examples of informative writing by eighth-graders at each of the six levels, and a discussion of how the scoring guide applies to the six student writing samples.

[1]The three topics are available in *The NAEP 1998 Writing Report Card for the Nation and the States* (Greenwald et al. 1999). Additional information is available from the "Sample Questions" section of the NAEP Home Page: *http://nces.ed.gov/nationsreportcard/ITMRLS/intro.shtml*

[2]The same basic guide was used for all three writing purposes, with some modifications.

Focused Holistic Scoring

The scorers of the NAEP 1998 Writing Assessment used a scoring method described as "focused holistic scoring." This approach combines holistic and "primary trait" scoring. A strict holistic approach to the scoring of writing treats a writing task as a "springboard" for writing. A particular writing task is given to students as a stimulus to engage them and inspire them to write, and students' responses are scored in terms of the overall writing quality. "Primary trait" writing scoring, on the other hand, is concerned with how well students respond to a specific topic. For example, if students are asked to write about whether they like adventure movies, students who do not address the topic of adventure movies will receive lower scores than those who do.

The "focused holistic scoring" approach used by NAEP, as with all holistic approaches, requires scorers to rate the overall quality of the writing, regardless of how students choose to respond to specific aspects of a given topic. In contrast to some holistic approaches to the scoring of writing that offer very general guidelines, however, NAEP scorers were given detailed scoring guides that focused their attention on specific characteristics of students' writing (organization, development, syntax, and mechanics). In this sense, the "traits" of writing now at issue for NAEP writing scoring have shifted from topic-related traits of student responses to traits associated with overall quality of writing.

The basic assumptions of the NAEP focused holistic scoring approach are given below:

- Each of the factors involved in writing is related to all others and no one factor can be separated from the others.
- A writer is entitled to make some mistakes, given the 25-minute time limit, the lack of recourse to a dictionary, and the lack of time for reviewing and editing.
- Scorers should read each response as a whole—without focusing on each mistake (but still being aware of them)—to judge the level of writing ability demonstrated by the student.

Figure 1.—Eighth-grade informative writing scoring guide

1. **Unsatisfactory response** (may be characterized by one or more of the following)
   - Attempts to respond to prompt, but provides little or no coherent information; may only paraphrase the prompt.
   - Has no apparent organization OR consists of a single statement.
   - Minimal or no control over sentence boundaries and sentence structure; word choice may be inaccurate in much or all of the response.
   - A multiplicity of errors in grammar or usage (such as missing words or incorrect word use or word order), spelling, and punctuation severely impedes understanding across the response.
2. **Insufficient response** (may be characterized by one or more of the following)
   - Presents fragmented information OR may be very repetitive OR may be very undeveloped.
   - Is very disorganized; thoughts are tenuously connected OR the response is too brief to detect organization.
   - Minimal control over sentence boundaries and sentence structure; word choice may often be inaccurate.
   - Errors in grammar or usage (such as missing words or incorrect word use or word order), spelling, and punctuation interfere with understanding in much of the response.
3. **Uneven response** (may be characterized by one or more of the following)
   - Presents some clear information, but is list-like, undeveloped, or repetitive OR offers no more than a well-written beginning.
   - Is unevenly organized; the response may be disjointed.
   - Exhibits uneven control over sentence boundaries and sentence structure; may have some inaccurate word choices.
   - Errors in grammar, spelling, and punctuation sometimes interfere with understanding.
4. **Sufficient response**
   - Develops information with some details.
   - Organized with ideas that are generally related, but has few or no transitions.
   - Exhibits control over sentence boundaries and sentence structure, but sentences and word choice may be simple and unvaried.
   - Errors in grammar, spelling, and punctuation do not interfere with understanding.
5. **Skillful response**
   - Develops and shapes information with details in parts of the response.
   - Is clearly organized, but may lack some transitions and/or have occasional lapses in continuity.
   - Exhibits some variety in sentence structure and some good word choices.
   - Errors in grammar, spelling, and punctuation do not interfere with understanding.
6. **Excellent response**
   - Develops and shapes information with well-chosen details across the response.
   - Is well organized with strong transitions.
   - Sustains variety in sentence structure and exhibits good word choice.
   - Errors in grammar, spelling, and punctuation are few and do not interfere with understanding.

SOURCE: U.S. Department of Education, National Center for Education Statistics. (1999) *The NAEP 1998 Writing Report Card for the Nation and the States* (NCES 1999-462), p. 141.

- After thorough training on the scoring of responses written on a given task, scorers should quickly read an entire response and assign a score based on the total impression conveyed by the response.
- Scorers should ignore their personal standards of what constitutes good writing and embrace the criteria of the scoring guide.
- Scorers should read supportively rather than critically.

Informative Writing

Informative writing focuses primarily on the subject-matter element in communication. This type of writing is used to share knowledge and to convey messages, instructions, and ideas. Like all writing, informative writing may be filtered through the writer's impressions, understanding, and feelings. Used as a means of exploration, informative writing helps both the writer and the reader to learn new ideas and to reexamine old conclusions.

Informative writing may also involve reporting on events or experiences, or analyzing concepts and relationships, including developing hypotheses and generalizations. Any of these types of informative writing can be based on the writer's personal knowledge and experience or on information newly presented to the writer that must be understood in order to complete a task. Usually, informative writing involves a mix of the familiar and the new, and both are clarified in the process of writing. Depending on the task, writing based on either personal experience or secondary information may span the range of thinking skills from recall to analysis to evaluation.

Eighth-grade students were given a number of informative topics in the NAEP 1998 Writing Assessment. The same informative scoring guide was used for all of these topics. This issue of *NAEPfacts* presents eighth-grade student writing samples at all six response levels, from "Unsatisfactory" to "Excellent," that students wrote about a proposed television show for teenagers. The complete text of the topic is as follows:

> **Designing a TV Show**
>
> A public television network is seeking ideas for a new series of shows that would be educational for teenagers. The series will include ten one-hour episodes and will be shown once a week. Some of the titles under consideration are:
>
> "Great Cities of the World"
>
> "Women in History"
>
> "Nature Walks"
>
> "American Legends"
>
> Choose one of these titles. Write a letter to the network president describing your ideas for a new educational series. In your letter, describe what one episode might be like. Use specific examples of what information you would include in the episode so the network president will be able to imagine what the series would be like.

1. Sample "Unsatisfactory" response

Dear President,

I would like to do a brochure, on "Great Cities of the World" I need your opinion should I do it on New York, Tokyo, Tiawan, Los Angelos, or should I do all of them?

Always

Student

The "Unsatisfactory" rating was given to 3 percent of the responses to this topic. As the scoring guide (figure 1) indicates, such responses were very undeveloped or very poorly written. In the "Unsatisfactory" response shown above, the student chooses one of the series titles provided in the topic and asks what to include, without presenting his or her ideas about what to show on the television series.

2. Sample "Insufficient" response

Dear President

I think you should do the series on "Great City's of the World." If you did the series off of that title it would be best. You would get to learn about all the cities instead of just one city. Because teenagers could learn about other cities in other countries. That's why I think you should do the series on "Great City's of the World."

The "Insufficient" rating was given to 13 percent of the responses to this topic. Such responses supplied only minimal information about the student's choice of an educational television series. In the example shown above, the student provides a justification for the series: "You would get to learn about all the cities instead of just one

city." However, the student does not develop that justification by describing the substance of the show.

3. Sample "Uneven" response

Dear Network President,

I think you should do a show on American legends. You can tell about real people like George Washington or Abraham Lincon. You might want to consider using fictional characters such as Paul Bunyan or Johnny Appleseed. You might want to do shorter section on all of the less popular Presidents like Teddy Roosevelt or Woodrow Wilson.

I would put in how George Washington helped win the Revolutionary War or how he made a good President You could also tell how John F. Kennedy was assasianated or how Abraham Lincon helped in the Cival War.

The "Uneven" rating was given to 40 percent of the responses to this topic. In many of these responses, students mentioned a few specific elements to be presented on the television series, but listed rather than developed them. In the "Uneven" paper shown above, the student enumerates various "American Legends" to be presented, along with an identifying detail or two about George Washington, John F. Kennedy, and Abraham Lincoln, for example: "You could also tell how John F. Kennedy was assasianated or how Abraham Lincon helped in the Cival War." The student, however, does not develop points, and his or her command of the mechanics of writing is uneven.

4. Sample "Sufficient" response

Dear Mr. President,

I think you should have a show about "Women in history." A lot of people want to know about women and what they've done to help our country. There have been many women heroes, and they should be recognized. You could do the show like Wishbone, except all the shows be about women in history instead of characters from a book. An idea for a show is Anne Frank. You could go to the place where they hid for so long and do the show right there. Everyone will get the chance to see how Anne lived. A lot of people haven't heard or seen her story. Well, it's time they do! So, please take into consideration my ideas and respond when you make your decision.

Students at the upper score levels ("Sufficient" or better) provided organized responses with illustrative details. Some students provided descriptions of an entire episode, down to the dialogue and camera angles.

The "Sufficient" rating was given to 34 percent of the responses to this topic. Such responses were organized and provided some details. In the response shown above, the student's writing is clear, accurate, and organized.

5. Sample "Skillful" response

Dear Network President,

I think that I have a new show for your network. It's called Great Cities of the World. The show is about four teenagers, around the ages of fourteen to seventeen who travel around the world. In each show they travel to two cities. When they arrive in the city they will first talk about the cities history and what it is like now in the present. They talk about some of the tradions of the city. For example if the students went to Paris, France they would talk about France's past and some of the things they do in there daily lives. They could talk about the people, what they look like and their styles. To keep the show interesting you can show things such as we learn how to say a word from their language or meet many different people from their city. Also to keep the show interesting they can have problems

The "Skillful" rating was given to 8 percent of the responses to this topic. In such responses, students used detail and elaboration in parts of the response, with transitions to connect ideas. In the response shown above, the student specifies who will be the narrators of the show and the order in which information will be presented: "The show is about four teenagers, around the ages of fourteen to seventeen who travel around the world. In each show they travel to two cities. When they arrive in the city they will first talk about the cities history and what it is like now in the present." The student also uses the example of Paris as the subject for one show. The student uses complex sentences and transitions (such as "When they arrive in the city. . . . For example. . . .") to tie points together and lead the reader through the essay.

6. Sample "Excellent" response[1]

Dear Network president,

Hello! I am a young teenager and I think that teenagers these days would like to see something educational. I think a good idea for a t.v. show would be "Great Cities of the World. ¶For example, one episode could be about Chicago and tell famous places you could visit. One place could be the Sears Tower in which a camera could show people going up in an elevator and then seeing the view of downtown

[1]The "¶" symbols in the sample are paragraph signs and reflect symbols placed in the text by the student.

Chicago. ¶Another place the t.v. show could go to is the Shed Aquarium. In it are many types of ocean life that interesting to see up close. They could also go to the art museum and look at famous paintings. ¶Just for fun, the show could go to F.A.O. Schwartz, a large toy store with many toys you can play with. As a matter of fact, you could just go shopping period. Chicago is known for its many stores ¶Then you could take a trip to a restaurant such as Ed Debivic's or Planet Hollywood, just to spice up the show a bit. ¶Now that I've explained where to go in Chicago, I'll tell you a little more about the set-up of the show. I think that you should have a host who is young, around fiftheen, energetic, and a spunky personality. She or he could act as the tour guide and show the viewers around each city. She could also explain the city's trademark's, such as the Sears Tower. I think that if you use a young person, it would attract young viewers.

¶ And last of all, I think the camera should look at the city as if it was viewer's eyes. For example, when you look around, you see things as you would see them, as if you were really there in Chicago, sight-seeing.

¶ Well, I hope you enjoy my input and put it into consideration. I'll be looking forward to seeing a new t.v. show about "Great Cities of the World."

The "Excellent" rating was given to 2 percent of the responses to this topic, in which students used detail and development across the response. The "Excellent" response shown above describes an entire episode of a television series in detail. The student includes such details as how the camera would move: "One place could be the Sears Tower in which a camera could show people going up in an elevator and then seeing the view of downtown Chicago." He or she describes a wide variety of sights in Chicago with suggestions for how to present them. Points such as "I think the camera should look at the city as if it was viewer's eyes" enable the reader to visualize the show. This student shows good control of language; occasional minor errors do not interfere with meaning.

Conclusion

The scoring guides used in the NAEP 1998 Writing Assessment set six possible levels of writing performance for students, from "Unsatisfactory" to "Excellent." Among eighth-graders who wrote on the "TV Show" informative writing topic, 3 percent were rated "Unsatisfactory," 13 percent were rated "Insufficient," 40 percent were rated "Uneven," 34 percent were rated "Sufficient," 8 percent were rated "Skillful," and 2 percent were rated "Excellent."

Scoring guides, or "rubrics," are a widely used means of ensuring objective scoring for student work that requires a judgment of quality. Teachers working with scoring guides in the classroom can use the guides not only to evaluate student work but also to explain to students where their work needs improvement.[4]

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NAEP Scoring of Twelfth-Grade Persuasive Writing

Sheida White and Alan Vanneman

This article was originally published as a* NAEPfact. *The sample survey data are from the National Assessment of Educational Progress (NAEP) 1998 Writing Assessment.

Overview

The National Assessment of Educational Progress (NAEP) 1998 Writing Assessment measured student writing performance at the 4th, 8th, and 12th grades. Scoring guides for three different writing purposes for each grade allowed scorers to objectively evaluate students' work. This issue of *NAEPfacts* includes a 12th-grade persuasive writing scoring guide, along with samples of student work at each of six levels of performance on the scoring guide.

Introduction

The *NAEP Writing Framework*, developed by the National Assessment Governing Board (NAGB 1997, pp. 5–11), determined that the NAEP 1998 Writing Assessment should require students in the 4th, 8th, and 12th grades to write for three different purposes: *narrative*, *informative*, and *persuasive*. Student performance would be evaluated on the basis of responses to a variety of different topics within each purpose.

Most 12th-graders received two writing topics, or "prompts," and were given 25 minutes to write on each while some received one 50-minute topic. Each topic was classified as either *narrative*, *informative*, or *persuasive*. Twenty-three topics were used in the 12th-grade assessment—twenty 25-minute topics and three 50-minute topics. Three 25-minute topics have been released to the public.[1]

Student writing samples were assessed according to a scoring guide that established six levels of student performance for each grade and writing purpose, ranging from "Unsatisfactory" to "Excellent."[2] This issue of *NAEPfacts* includes the complete text of the 12th-grade persuasive scoring guide (figure 1), examples of persuasive writing by 12th-graders at each of the six levels, and a discussion of how the scoring guide applies to the six student writing samples.

[1]The three topics are available in *The NAEP 1998 Writing Report Card for the Nation and the States* (Greenwald et al. 1999). Additional information is available from the "Sample Questions" section of the NAEP Home Page: *http://nces.ed.gov/nationsreportcard/ITMRLS/intro.shtml*

[2]The same basic guide was used for all three writing purposes, with some modifications.

Focused Holistic Scoring

The scorers of the NAEP 1998 Writing Assessment used a scoring method described as "focused holistic scoring." This approach combines holistic and "primary trait" scoring. A strict holistic approach to the scoring of writing treats a writing task as a "springboard" for writing. A particular writing task is given to students as a stimulus to engage them and inspire them to write, and students' responses are scored in terms of the overall writing quality. "Primary trait" writing scoring, on the other hand, is concerned with how well students respond to a specific topic. For example, if students are asked to write about whether they like adventure movies, students who do not address the topic of adventure movies will receive lower scores than those who do.

The "focused holistic scoring" approach used by NAEP, as with all holistic approaches, requires scorers to rate the overall quality of the writing, regardless of how students choose to respond to specific aspects of a given topic. In contrast to some holistic approaches to writing scoring that offer very general guidelines, NAEP scorers were given detailed scoring guides that focused their attention on specific characteristics of students' writing (organization, development, syntax, and mechanics). In this sense, the "traits" of writing now at issue for NAEP scoring of writing have shifted from topic-related traits of student responses to traits associated with overall quality of writing.

The basic assumptions of the NAEP focused holistic scoring approach are given below:

- Each of the factors involved in writing is related to all others and no one factor can be separated from the others.
- A writer is entitled to make some mistakes, given the 25-minute time limit, the lack of recourse to a dictionary, and the lack of time for reviewing and editing.
- Scorers should read each response as a whole—without focusing on each mistake (but still being aware of them)—to judge the level of writing ability demonstrated by the student.

Figure 1.—Twelfth-grade persuasive writing scoring guide

1. **Unsatisfactory response** (may be characterized by one or more of the following)
   - Attempts to take a position (addresses topic), but position is very unclear OR takes a position, but provides minimal or no support; may only paraphrase the prompt.
   - Exhibits little or no apparent organization.
   - Minimal or no control over sentence boundaries and sentence structure; word choice may be inaccurate in much or all of the response.
   - Errors in grammar, spelling, and punctuation severely impede understanding across the response.
2. **Insufficient response** (may be characterized by one or more of the following)
   - Takes a position but response is very undeveloped.
   - Is disorganized or unfocused in much of the response OR clear but very brief.
   - Minimal control over sentence boundaries and sentence structure; word choice may often be inaccurate.
   - Errors in grammar, spelling, and punctuation interfere with understanding in much of the response.
3. **Uneven response** (may be characterized by one or more of the following)
   - Takes a position and provides uneven support; may lack development in parts or be repetitive OR response is no more than a well-written beginning.
   - Is organized in parts of the response; other parts are disjointed and/or lack transitions.
   - Exhibits uneven control over sentence boundaries and sentence structure; may exhibit some inaccurate word choices.
   - Errors in grammar, spelling, and punctuation sometimes interfere with understanding.
4. **Sufficient response**
   - Takes a clear position and supports it with some pertinent reasons and/or examples; there is some development.
   - Is generally organized, but has few or no transitions among parts.
   - Sentence structure may be simple and unvaried; word choice is mostly accurate.
   - Errors in grammar, spelling, and punctuation do not interfere with understanding.
5. **Skillful response**
   - Takes a clear position and supports it with pertinent reasons and/or examples through much of the response.
   - Is well organized, but may lack some transitions.
   - Exhibits some variety in sentence structure and uses good word choice; occasionally, words may be used inaccurately.
   - Errors in grammar, spelling, and punctuation do not interfere with understanding.
6. **Excellent response**
   - Takes a clear position and supports it consistently with well-chosen reasons and/or examples; may use persuasive strategy to convey an argument.
   - Is focused and well organized, with effective use of transitions.
   - Consistently exhibits variety in sentence structure and precision in word choice.
   - Errors in grammar, spelling, and punctuation are few and do not interfere with understanding.

SOURCE: U.S. Department of Education, National Center for Education Statistics, (1999) *The NAEP 1998 Writing Report Card for the Nation and the States* (NCES 1999–462), p. 145.

- After thorough training on the scoring of responses written on a given task, scorers should quickly read an entire response and assign a score based on the total impression conveyed by the response.
- Scorers should ignore their personal standards of what constitutes good writing and embrace the criteria of the scoring guide.
- Scorers should read supportively rather than critically.

Persuasive Writing

Persuasive writing focuses on the reader. Its primary aim is to influence others to take some action or bring about change. Persuasive writing may contain great amounts of information—facts, details, examples, comparisons, statistics, or anecdotes—but its main purpose is not simply to inform but to persuade. This type of writing involves a clear awareness of what arguments might most affect the audience being addressed. Writing persuasively also requires use of critical thinking skills such as analysis, inference, synthesis, and evaluation.

Persuasive writing is called for in a variety of situations. It may involve making a response to a request for advice by giving an opinion and providing sound reasons to support it. It may also involve presenting an argument in a way that a particular audience will find convincing. When there is opposition, persuasive writing may entail refuting arguments that are contrary to the writer's point of view.

In all persuasive writing, authors must choose the approach they will use. They may, for instance, use emotional or logical appeals or an accommodating or demanding tone. Regardless of the situation or approach, persuasive writers must be concerned with having a particular desired effect upon their readers, beyond merely adding to knowledge of the topic presented.

Twelfth-grade students were given a number of persuasive topics on which to write in the NAEP 1998 Writing Assessment. The same persuasive scoring guide was used for all of these topics. Because most students only had 25 minutes to create a writing sample, NCES did not strongly differentiate the narrative, informative, and persuasive scoring guides. For the most part, all three types of writing were scored according to the same criteria.

This issue of *NAEPfacts* presents 12th-grade writing samples at all six response levels, from "Unsatisfactory" to "Excellent," that students wrote to advocate a position on the efficacy of voting, either for or against. The complete text of the topic on which students were asked to write is given below:

> One Vote
>
> Your school is sponsoring a voter registration drive for 18-year-old high school students. You and three of your friends are talking about the project. Your friends say the following.
>
> Friend 1: "I'm working on the young voters' registration drive. Are you going to come to it and register? You're all 18, so you can do it. We're trying to help increase the number of young people who vote and it shouldn't be too hard—I read that the percentage of 18- to 20-year-olds who vote increased in recent years. We want that percentage to keep going up."
>
> Friend 2: "I'll be there. People should vote as soon as they turn 18. It's one of the responsibilities of living in a democracy."
>
> Friend 3: "I don't know if people should even bother to register. One vote in an election isn't going to change anything."
>
> Do you agree with friend 2 or 3? Write a response to your friends in which you explain whether you will or will not register to vote. Be sure to explain why and support your position with examples from your reading or experience. Try to convince the friend with whom you disagree that your position is the right one.

1. Sample "Unsatisfactory" response

Student response: I agree with #3 because if you want to vote go for it. Because it is you choice.

The "Unsatisfactory" rating was given to 4 percent of the responses to this prompt. As the scoring guide (figure 1) indicates, such responses were sometimes so unclear that the reader could not tell what position the student was taking. Other responses rated "Unsatisfactory" were extremely undeveloped. For example, in the response shown above, the student only states that he or she agrees with one of the three friends in the reported conversation and goes no further.

2. Sample "Insufficient" response

Student response: It is very important that you would go out and vote. If everybody thought like that anyone could become president It is also important because who we pick will run or lead our nation for the next four years. We dont want just anyone up there, we want the best man to do the job. Or If voting for something else such as governor or senator, It dont matter. This is a priviledge given to us and we should take it not abuse it. People who would not or dont care to vote are just to lazy to go and vote.

The "Insufficient" rating was given to 21 percent of the responses to this prompt. Such responses were lacking either in organization or development (support of a position with reasons). In the "Insufficient" response shown above, the student does not justify his or her position beyond saying that it matters who gets elected.

3. Sample "Uneven" response

Student response: I would agree with Freind 2 because everyone should vote to support what they feel is nessecary. Also Freind 3 dosan't know what he or she is talking about because 1 vote can defenatly make a diffrence. I think I'm going to vote because if something were to happen like a new tax that I did not want my vote could have prevented that. Freind 3 can change alot just by his one vote so he should register, the reason for this is if 50 people voted on something and were all in favor for it and 49 were not in favor and he and I were with the 49 that were against it but did not register. If we would have registered it could have made it 51 people against and 50 for it.

The "Uneven" rating was given to 30 percent of the responses to this prompt. In such responses, students attempted to provide an argument supported with reasons, but faltered through lack of organization, problems with grammar that interfered with understanding, or incomplete development. In the response shown above, the student provides a somewhat undeveloped argument, despite the example at the end to illustrate how one vote can make a difference. The student jumps from the point that "everyone should vote to support what they feel is nessecary" to the statement that "1 vote can defenatly make a diffrence" without developing either point.

4. Sample "Sufficient" response

Student response: I think friend 2 is right. I believe that every single person's vote can help make a difference. It is important that we vote for who will lead our country, cities, counties and parishes. Our right to vote is our way of getting what we think our community deserves. The right to vote is your voice in the government. Many people who don't even vote complain about government leaders. But I say how can you complain if you didn't voice your opinion on who you think has the capability and skills to be a good leader. Your vote, along with others who didn't vote, could have made the difference. If no one voted our country would not have democracy. We could be lead by someone like Hitler or Mussolini. We as Americans have a choice. We should all take advantage of that right, to choose who will lead us. Who we choose to run our government has a direct effect on us. We should all be will to try to choose who's right and who's for the people.

The "Sufficient" rating was given to 32 percent of the responses to this prompt. In the "Sufficient" response shown above, the student organizes reasons into a complete, clear argument. Though the reasons are not developed with many details, the paper is organized and unified. The student connects points to build an argument: "Many people who don't even vote complain about government leaders. But I say how can you complain if you didn't voice your opinion on who you think has the capability and skills to be a good leader." The control of language is noticeably better than in responses that received ratings below "Sufficient." Some problems with mechanics, especially in the last sentence of the essay, do not impede the overall clarity and unity of the paper.

5. Sample "Skillful" response

Student response: I would agree with friend 1 but in a slightly different way. Voting isn't a responsibility it's an opportunity. It is a way to show support for someone or something that you believe in. One of the great things about this country is that we have the right to vote and this right should not be taken for granted.

Friend 3 is somewhat right in the sense that one vote really won't make much of a difference (especially in a presidential election). However, if everyone used this as an excuse not to vote then the true beliefs of the general public would remain hidden from the government in which case they would do whatever they wanted because people wouldn't tell them what they think they should do.

It is becoming more important that young people vote because most of the registered voters are older. In order to get an accurate representation of what all citizens want then it is necessary for everyone to be an active voter.

The electoral college, in a way, discourages many people from voting because it eliminates the "one man, one vote" rule. It is very likely that many people will think that their vote makes little or no difference at all. Stories of electors that don't even vote for their pledged candidate do not help peoples' opinions on voting.

The "Skillful" rating was given to 10 percent of the responses to this prompt. In these responses, students elaborated reasons with details or examples in some, but not all, of the response and used transitions to connect ideas. In the "Skillful" response shown above, the student introduces the theme in the first paragraph: "Voting isn't a

responsibility it's an opportunity." The student then points out why it is important to vote: to make the "beliefs of the general public" clear (second paragraph) and "to get an accurate representation of what all citizens want" (third paragraph).

6. Sample "Excellent" response

Student response: Whether a single person's vote makes a difference in an election is irrelevant. A democratic nation is one that recognizes an individual right to think and formulate an opinion, and voting is a manifestation of that right.

Mankind, the acknowledged ruler of the Earth, has little advantage over the other life-forms he shares existence with. As pointed out in the play Inherit the Wind, the horse is swifter, the mosquito more prolific, even a simple sponge is more durable. What separates mankind from other species is his simple brain-power: his ability to think.

The founding fathers of America recognized the fatal flaw of other nations – foolish monarchs who claimed absolute authority over their subjects. Dictatorial societies have the same root cause of their downfall – the attempts of squelching out personal opinion.

Voting celebrates the freedom the nation received on July 4, 1776 - voting is not a duty or a chore, it is a priveledge that we as humans have as our only advantage. We have the right and fortunautely because of our democratic society, the freedom to think.

The "Excellent" rating was given to 3 percent of the responses to this prompt. Students who wrote "Excellent" responses consistently elaborated reasons with details or examples, used transitions throughout, and often showed greater control over language (fewer errors and greater variety of sentence structure) than papers at the "Skillful" level. In the response shown above, the student provides a consistent, elaborated argument and demonstrates a command of rhetoric unusual even for an "Excellent" response to this prompt.

Conclusion

The scoring guides used in the NAEP 1998 Writing Assessment set six possible levels of writing performance for students, from "Unsatisfactory" to "Excellent." Among 12th-graders who wrote on the "One Vote" persuasive writing topic, 4 percent were rated "Unsatisfactory," 21 percent were rated "Insufficient," 30 percent were rated "Uneven," 32 percent were rated "Sufficient," 10 percent were rated "Skillful," and 3 percent were rated "Excellent."

Scoring guides, or "rubrics," are a widely used means of ensuring objective scoring for student work that requires a judgment of quality. Teachers working with scoring guides in the classroom can use the guides not only to evaluate student work but also to explain to students where their work needs improvement.[3]

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[3]For more information on the use of scoring guides or rubrics, see Moskal (2000). The ERIC Clearinghouse has a discussion of rubrics, a bibliography, and additional links at *http://ericae.net/faqs/rubrics/scoring_rubrics.htm*

For technical information, see
Greenwald, E.A., Persky, H.R., Campbell, J.R., and Mazzeo, J. (1999). *The NAEP 1998 Writing Report Card for the Nation and the States* (NCES 1999–462).
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Issues Related to Estimating the Home-Schooled Population in the United States With National Household Survey Data

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This article was originally published as the Executive Summary of the Technical Report of the same name. The sample survey data are from the NCES National Household Education Survey (NHES) and the October Current Population Survey (CPS), conducted by the U.S. Census Bureau.

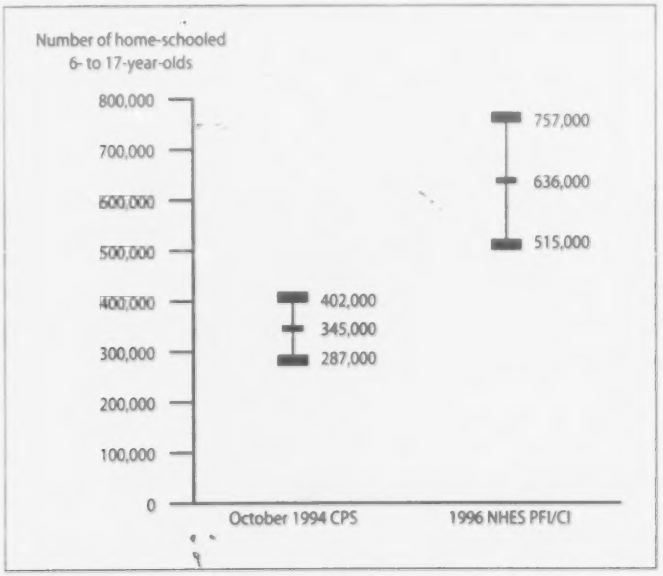
Introduction

Home schooling in the United States has become a topic of interest to education policymakers, administrators, and the general public. Currently, published estimates of the number of children who are home schooled vary by hundreds of thousands of children and are of uncertain reliability. Informed discussions of home-schooling policy are compromised without accurate estimates of how many children are educated at home and whether the proportion of children who are so educated is changing.

Estimates of the number and proportion of students who were home schooled derived from two sets of national survey data from the mid-1990s—the October 1994 Current Population Survey (CPS:Oct94) Education Supplement and the 1996 National Household Education Survey (NHES:1996) "Parent and Family Involvement/Civic Involvement" component (PFI/CI)—also vary. The point estimates of the number of children ages 6 to 17 who were home schooled ranged from 345,000 in CPS:Oct94 to 636,000 in NHES:1996 (figure A). Taking estimated sampling variance into account, the 95 percent confidence interval around the CPS:Oct94 point estimate ranges from 287,000 to 402,000, and the 95 percent confidence interval around the NHES:1996 point estimate ranges from 515,000 to 757,000. According to CPS:Oct94, 0.8 percent of children were home schooled, and according to NHES:1996, 1.4 percent of children were home schooled.

Although the differences between these surveys' estimates may reflect growth in the number and proportion of students who are home schooled, it seems unlikely that the number of home-schooled children nearly doubled in less than 2 years (Lines 1998; Ray 1999). This report explores

Figure A.—CPS and NHES point estimates and their 95 percent confidence intervals of number of home-schooled 6- to 17-year-olds: 1994 and 1996



SOURCE: U.S. Department of Commerce, Bureau of the Census, Current Population Survey (CPS), October 1994. U.S. Department of Education, National Center for Education Statistics, National Household Education Survey (NHES), "Parent and Family Involvement/Civic Involvement" component (PFI/CI), 1996.

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differences in survey design and execution that may have contributed to these two different estimates.

The report is based on the premise that for any given year, there is some "true" number of home-schooled children in the population. Point estimates derived from CPS and NHES depart from this true value by some amount of error. Errors in surveys include errors of nonobservation, errors of observation, and data processing errors (Groves 1991). After describing the data sources, this report examines each type of error.

Data Sources

For decades the U.S. Census Bureau has conducted CPS each month on behalf of the Bureau of Labor Statistics in order to study labor force participation and unemployment. CPS includes a set of basic labor force and demographic questions that are repeated each month and a supplement, whose topic varies from month to month. Each October's supplement focuses on participation in education programs for civilians age 3 and older, and in 1994 the October supplement included questions related to home schooling.

CPS samples households using addresses from the most recent Decennial Census and updates to it as the sampling frame. Each sampled household is part of CPS for 8 months. In its 1st- and 5th-month interviews, the household's interview is conducted in person: a Census Bureau interviewer visits the home and conducts the interview with a laptop computer. With the household's permission, the remaining six interviews are conducted by telephone. Interviewers attempt to speak with the most knowledgeable person in the household, although any household member 15 years old or older may serve as the respondent. Respondents answer questions regarding all household members.

The National Center for Education Statistics (NCES) has conducted NHES five times since the first administration in 1991. NCES uses NHES to collect data on education issues on which households, rather than education institutions, are best able to provide data. Each time NHES is fielded, a Screener interview is used to determine whether the household includes members who are eligible for either of two extended topical interviews. In 1996, one of these interviews—the PFI/CI component—of NHES included questions on children's schooling, including home schooling. The PFI/CI component sampled children from age 3 through 12th grade, with a maximum age of 20.

NHES is a random-digit-dial (RDD) telephone survey; that is, it samples households via telephone numbers. Interviewers in telephone centers use computer-assisted telephone interviewing (CATI) to conduct interviews from January through April of the administration year. Interviewers ask to speak with a household member at least 18 years old, who responds to the Screener questions. In 1996, once the interviewer determined through the Screener that a child in the household was eligible for the PFI/CI, the interviewer asked to speak with the parent or guardian who knew the most about the sampled child's care and education.

Impact of Nonobservation Errors

Errors of nonobservation occur when members of the target population are excluded from the sampling frame or when sampled members of the population fail to participate in the survey or some part thereof. This report discusses both of these sources of nonobservation error: sample coverage and nonresponse.

Sample coverage

Both the CPS and NHES sampling frames undercover some groups within the U.S. noninstitutionalized population, although each undercovers different segments. The Census Bureau estimates that CPS undercovers between 7 and 13 percent of infants through 19-year-olds in the population. Among children, males, blacks, and older children are more likely than females, nonblacks, and younger children to be missed. Sampling weights adjust for undercoverage with respect to these demographic characteristics, but to the extent that undercovered groups home school at rates different from the general population, these weights may not eliminate error in estimates related to home schooling. However, because home schooling is a rare event and the rates of undercoverage are low, even if the relatively small undercovered groups were home schooled at rates considerably higher or lower than the general population, the error in the estimates would be small.

NHES has two primary sources of undercoverage: the exclusion of nontelephone households and the exclusion of some residential telephone numbers due to the particular method of random digit dialing used to sample households. CPS:Oct94 data indicate that approximately 6 percent of households did not have telephones. Sampling weights adjust NHES estimates to population controls derived from the Census, and therefore adjust for the undercoverage of households without telephones. CPS:Oct94 data indicate

that children in nontelephone households were home schooled at the same rate as children in telephone households, and therefore there is no evidence of error due to the exclusion of nontelephone households.

To reduce costs, NHES uses the list-assisted method of random digit dialing, and studies of the list-assisted method indicate that 3 to 4 percent of residential telephone numbers are excluded from the sampling frame when this method is used. It is not possible to determine empirically whether children in these households are more or less likely to be home schooled than are children in included households. However, the rate of home schooling is generally low and the proportion of excluded households is small. Therefore, even if the rate of home schooling were considerably different among excluded households compared with included households, the potential error in the estimated number and percentage of home-schooled children would be small.

Although there is some potential for error in the studies' sampling frames, neither of the studies' sample designs appears to be biased. Both studies sample randomly from households within their frames and oversample some minority groups to collect sufficient data for reliable estimates concerning those groups. NHES:1996 PFI/CI randomly sampled children within households, depending on the number of children who were eligible to participate within a household.

Response rates

Response rates were calculated at three levels—household, supplement or extended interview, and item—for each survey. The CPS:Oct94 household response rate (94 percent) was considerably higher than the NHES:1996 Screener response rate (70 percent). The low household response rate in NHES allows for the possibility that home-schooling families, who may not wish to be identified or involved in government-related research (Kaseman and Kaseman 1991), may have participated at a lower rate than other families. However, because families with children in grades K–12 make up approximately 30 percent of the population of households in the United States, approximately 9 percent, rather than the entire 30 percent, of nonresponding households might include children in the desired age/grade range who were home schooled. At the second level, supplement in CPS and PFI/CI interview in NHES, CPS again had a higher response rate than NHES (97 percent compared with 89 percent, respectively).

In both surveys the item response rates were high for items used in these analyses. Among the items that identify home-schooled children in CPS:Oct94, all of the items had response rates of at least 92 percent, and nearly all relevant items in NHES:1996 had item completion rates approaching 100 percent. It appears, therefore, that families who participated in the surveys were not unwilling to discuss home schooling.

However, because missing data for many items were not imputed in the CPS:Oct94 data set, some cases had to be excluded from the CPS analyses because it was not possible to determine whether they met the criteria that defined the sample or whether they were home schooled. The excluded cases represented about 2 million of the 46 million 6- to 17-year-olds in the United States. If the excluded children were home schooled at the same rate as children who were included, approximately 30,000 additional children would be home schooled. However, the characteristics of excluded children, especially age, suggest that excluded children may well be home schooled at a lower rate than included children.

Thus, although missing data may bias the CPS:Oct94 estimate, they are not likely to affect it greatly. The effect of the lower NHES:1996 household response rate cannot be estimated.

Impact of Observation Errors

Observation errors can be introduced by data collection procedures, survey instruments, and respondents.

Data collection

The surveys differ with respect to data collection procedures in at least three ways. First, although both surveys are conducted with computer-assisted interviewing (CAI), CPS interviewers use both personal interviewing (CAPI) and telephone interviewing (CATI), whereas NHES interviews are conducted entirely via telephone interviewing. Whether and how personal interviewing, compared with telephone interviewing, might produce different results with respect to home schooling is unknown.

Second, CPS is a panel survey, whereas NHES is not. The effects of this, aside from potential differences in response rates (which were examined separately), cannot be assessed with available data.

Third, the surveys also differ with respect to timing. In addition to the 15- to 18-month span between the surveys'

administration, the two surveys differ in the time of year at which they were administered. NHES is administered from January through April, in contrast to the October administration of the CPS Education Supplement. To the degree that parents are more likely to home school their children at some times of the year than at others, the difference in survey timing may contribute to the difference between the estimates.

Instrument error

This report examines question wording, question sequencing, respondent fatigue, and the location of home-schooling items as potential sources of instrument error.

Question wording and sequencing. The questions regarding home schooling were worded differently between the two studies and even among interviews in CPS:Oct94. CPS:Oct94 interviews varied depending on the age and enrollment status of the person about whom the interview was being conducted. Regarding enrolled children, the question as to whether the child was "schooled primarily at home" allows for the possibility that children who were schooled partly at home and partly at school were not identified as home schooled. NHES:1996 PFI/CI interviewers first asked whether children were enrolled and then asked, regardless of enrollment status, whether children were schooled at home. When respondents indicated that a child was home schooled, the interviewer clarified the response by asking whether the child was schooled at home "instead of at school." It is not clear how parents who schooled their children partly at home and partly at school might have responded to these items.

In addition to the difference in wording discussed above, the number of items and the complexity of their sequence are considerably greater in CPS:Oct94 than in NHES, creating more opportunities for missing or inaccurate responses. Although the greater number of items and the complexity of sequencing in CPS:Oct94 do not appear to have affected response rates, which were consistently high, whether they affected the quality of responses cannot be determined with the available data.

Respondent fatigue. When surveys become too long, respondents often begin to tire or lose interest, a phenomenon known as "respondent fatigue." As a consequence of this fatigue, questions near the end of a long survey often have higher rates of nonresponse and responses to these questions can be less accurate than responses to questions near the beginning of the survey.

The issue of respondent fatigue is addressed because the CPS Education Supplement questions regarding children's schooling occur near the end of the interview, after the basic labor force and supplement items for adults are asked. In contrast, the NHES items regarding children's schooling occur at the very beginning of the PFI/CI interview.

It appears unlikely that this difference has affected these data. As noted above, the response rates to the supplement items regarding home schooling are high, which indicates that fatigue did not affect response rates greatly. In addition, in CPS:Oct94, household interviews that included supplement interviews for children ages 6 to 17 years old averaged 15 minutes in length. Given this relatively short duration, fatigue is not likely to have been a problem. However, whether fatigue did occur and affected the quality of responses cannot be determined with these data.*

Respondent error

Respondents' knowledge of the survey topic affects their ability to answer questions accurately. Therefore, respondents' relationships to the children about whom the home-schooling questions were asked may affect the accuracy of their answers. In addition, the political/legal and cognitive contexts within which questions are asked and answered may affect respondents' answers.

Respondents' relationships to children. The CPS:Oct94 respondents could be different from the respondents to the NHES PFI/CI interviews because the instructions given to interviewers for choosing respondents differed between the two surveys. In CPS:Oct94, any household member 15 years old or older was eligible to respond for all household members, although interviewers were instructed to interview the most knowledgeable adult in the household if possible. In the NHES:1996 PFI/CI, interviewers asked to speak to the parent or guardian who knew most about the sampled child's education. Respondents were required to be 18 years old or older.

It is not possible to establish empirically whether and how the respondents for the two studies differed. Although data regarding the relationship of the respondent to the child are available for all children in NHES, these data are available only for 15- to 17-year-olds in CPS. The available data indicate that parents were the most frequent respondents in both surveys, and it seems quite likely that if parents were

*Although the NHES:1996 PFI/CI interviews were longer—19 minutes in addition to the 6-minute Screener interview—the home-schooling questions were asked at the beginning of the extended interview and are thus relatively safe from the effects of respondent fatigue.

the most common respondents for 15- to 17-year-olds in CPS:Oct94, they would also be so for younger children.

Political/legal and cognitive contexts. The political/legal and cognitive contexts within which surveys are conducted can affect respondents' answers to particular questions. Home-schooling researchers have suggested that home-schooling families may be more reticent than others to participate in government research, particularly research that might address the issue of home schooling, because of the often ambiguous legal status of home schooling (Kaseman and Kaseman 1991; Ray 1997). On the other hand, to the degree that in recent years parents have become more interested in home schooling and in working with schools and districts to facilitate home schooling, there may be less reason for concern in this regard.

The household- and item-level response rates provide relevant but conflicting evidence in this regard. The household response rate for NHES:1996 (which respondents were told was sponsored by the U.S. Department of Education and concerned education issues) was lower than the corresponding rate for CPS:Oct94 (which was conducted by the Census Bureau and which respondents were told covered labor force participation issues). This is consistent with the hypothesis that home-schooling parents may be more reluctant to discuss education issues, although the impact of the lower household response rate is somewhat mitigated because 30 percent of households, not 100 percent, are likely to include school-aged children. The high item response rates in both surveys indicate that respondents in participating households were no less likely to discuss home schooling than other issues. Unfortunately, whether the political/legal context of home schooling affected the quality of response cannot be determined with the existing data.

The cognitive context may also have been affected by the different sponsors and purposes of the two surveys. In general, participating respondents want to cooperate with interviewers, and in their attempts to do so, use all available information to determine what the interviewer wants to know so they can provide the best information. Therefore, respondents are likely to have considered the different sponsors when they responded to questions, although any particular effects of these considerations upon their responses cannot be predicted or measured.

Impact of Data Processing Errors

Whereas the NHES:1996 PFI/CI interview included online edits and all NHES:1996 data were edited after data collection concluded, the CPS:Oct94 supplement did not include online edits and the home-schooling items were not edited after data collection. As noted above, without editing, some cases could not be included in the CPS:Oct94 analysis due to missing information. Furthermore, not correcting errors that could be identified through consistency and plausibility checks in the CPS data may have contributed additional error to the CPS:Oct94 estimates relative to the NHES:1996 estimates. The available data do not permit estimation of the direction or magnitude of this potential error in this instance.

Conclusion

This report examines several differences between the methods used in CPS:Oct94 and NHES:1996 that may have contributed to the observed difference in the two surveys' estimates of the number and proportion of home-schooled children. The potential direction and magnitude of estimate differences could not be predicted for most of these methodological differences between the surveys, however.

This report raises a number of research questions regarding survey research and home schooling. First, it would be useful for researchers to address whether and how the political context of home schooling or other factors affect respondents' willingness to participate in the respective surveys and the accuracy of their answers to questions about home schooling. Second, research should explore the variety of schooling arrangements—exclusively at home, exclusively at school, and various combinations thereof—that parents make for their children, the frequency of these arrangements, and the factors that affect the kind of arrangement parents choose. Third, the results of cognitive laboratory research into parents' understanding of the term "home schooling" would aid in interpretation of responses to survey questions. Future research—using NHES:1999 data or cognitive laboratory studies of alternative question wording, for example—may address some of the issues raised in this report.

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Data sources: The NCES National Household Education Survey (NHES), "Parent and Family Involvement/Civic Involvement" component (PFI/CI), 1996; and Bureau of the Census, Current Population Survey (CPS), October 1994.

For technical information, see the complete report:

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National Household Education Survey of 1999: Methodology Report

Mary Jo Nolin, Jill Montaquila, Patricia Nicchitta, Kwang Kim, Brian Kleiner, Jean Lennon, Christopher Chapman, Sean Creighton, and Stacey Bielick

This article was originally published as the Introduction of the technical report of the same name. The sample survey data are from the NCES National Household Education Survey (NHES).

Background

The National Household Education Survey (NHES) is a household survey conducted by the National Center for Education Statistics (NCES). The survey is a random-digit-dial (RDD), computer-assisted telephone interview (CATI) and has been conducted in the spring of 1991, 1993, 1995, 1996, and 1999.

NHES complements other NCES surveys, which primarily collect data through institutional surveys. By collecting data directly from households, NHES allows NCES to gather data on issues that cannot easily be addressed through institution-based surveys, such as early education and care arrangements, children's readiness for school, parents' perceptions of school safety and discipline, participation in adult and continuing education, parents' involvement in their children's education, and civic involvement.

NHES collects information on education issues from a relatively large, targeted sample of households in a timely fashion. It fills a need that existing household surveys, such as the Current Population Survey (CPS) and the Survey of Income and Program Participation (SIPP), cannot satisfy because they are designed to focus primarily on issues other than education. In these other survey systems, data on education issues are usually collected through supplements to the main household survey. These supplemental surveys have not provided NCES with the level of detail needed for desired analyses.

NHES provides data on the populations of special interest to NCES and education researchers. It targets these groups using specific screening and sampling procedures. The survey instruments are designed to address the selected issues in sufficient detail so that analyses can be performed to help explain the phenomena of interest. Furthermore, the data collection methodology is specifically designed so that relatively complex questionnaires can be handled smoothly and efficiently.

One of the major goals of NHES is to monitor education activities over time. To accomplish this goal, the survey collects data on the same topics on a rotating basis. For example, NHES collected data on early childhood education in 1991, 1993, 1995, and 1999. Occasionally, topics that are not intended to be studied more than once, such as school safety and discipline, are also included in NHES.

The purpose of NHES:1999 was somewhat different than that of previous NHES surveys. Throughout the early and mid-1990s, each NHES has included two survey components (except NHES:1996, when three components were fielded), each addressing a certain topic in depth. In contrast, the focus of NHES:1999 was to collect a breadth of information on education topics previously addressed in NHES. NHES:1999 collected data on key indicators that had been measured in previous NHES survey cycles in order to provide the U.S. Department of Education with end-of-decade estimates for several important issues. Thus, virtually all of the items included in the NHES:1999 questionnaires have been administered in at least one previous NHES component.

Previous NHES Survey Topics

The survey topics included in NHES:1991, NHES:1993, NHES:1995, and NHES:1996 are discussed below.

NHES:1991 survey topics

The survey topics for NHES:1991 were early childhood education and participation in adult education. The sampled population for the "Early Childhood Education" (ECE) component of NHES:1991 was 3- to 8-year-old children who were not yet in third grade. There were two different interviews for the ECE component: one for parents of children who had not yet started first grade (called the "Preprimary Interview") and one for parents of children who were enrolled in first grade or higher (called the "Primary School Interview"). The "Preprimary Interview" collected information on children's receipt of nonparental home-based child care (such as in the home of a relative or a family day care provider) and participation in center-based programs (such as day care centers, nursery schools, prekindergartens, and Head Start programs where children receive early childhood care and education). Parents of preprimary children were also asked questions concerning actual or planned entry into kindergarten and decisions to delay entry. The "Primary School Interview" focused on

children's in-school experiences to date and collected some historical data on education experiences prior to first grade. Issues such as entry into kindergarten and first grade, parental involvement in children's education, and retention in kindergarten and primary grades were included in this instrument. A few items concerning the home environment and activities with family members were included for both groups of children.

The "Adult Education" (AE) component provided information about persons age 16 and older and not enrolled in elementary or secondary school and their participation in a wide array of adult education activities. The design of this component was based in part on the CPS supplement on adult education, supported by NCES and previously conducted in 1984. The findings provided important information related to the National Education Goals concerning adult literacy, ongoing training to compete in a global economy, and lifelong learning for adults. Information was collected on the number and types of courses in which adults had participated in the previous 12 months, including, for the four most recent courses, the course content, provider, location, sources of payment, and reason for taking the course. Unlike CPS, the NHES AE component was administered to a sample of nonparticipants as well, and focused on the perceived need for adult education courses, their availability, and barriers to participation.

NHES:1993 survey topics

NHES:1993 addressed two of the six National Education Goals, specifically, Goal 1 (readiness for school) and Goal 7 (safe, disciplined, and drug-free schools).

The "School Readiness" component of NHES:1993 was administered to parents of children age 3 through second grade (and age 7 or younger) and examined several relevant domains. It covered experiences in early childhood programs, children's developmental accomplishments and difficulties, school adjustment and related problems, delayed kindergarten entry, early primary school experiences including repeated grades, children's general health and nutrition status, home activities, and family characteristics, including stability and economic risk factors. The intent of collecting such data was to allow a "whole child" approach to studying school readiness. Because no existing national survey provided this broad approach to the readiness of children for school, the "School Readiness" component of NHES:1993 fulfilled an important information need relative to this first National Education Goal.

The second component of NHES:1993, the "School Safety and Discipline" component, included interviews with parents of children enrolled in 3rd through 12th grade, as well as with a subsample of their children enrolled in 6th through 12th grade. This component addressed parent and youth perceptions of the school learning environment; serious behavior problems or crime at school that parents and youth knew about, had witnessed, or through which students had been victimized; parents' and students' perceptions of peer approval for using alcohol and drugs and of the availability of alcohol and drugs at school; and the kinds of alcohol/drug education provided by the school. The component also addressed parents' contributions to their children's learning environment through questions about parental expectations for academic achievement and good behavior at school, parental efforts to educate and protect their children, and parental involvement in the school.

NHES:1995 survey topics

NHES:1995 addressed the same two topics as NHES:1991, with some modifications. The "Early Childhood Program Participation" (ECPP) component dealt with issues related to Goal 1 (readiness for school), and the AE component dealt with issues related to Goal 6 (adult literacy and lifelong learning).

The ECPP component of NHES:1995 was administered to parents of children from birth through third grade and focused on children's early experiences in various types of nonparental care arrangements and educational programs. The age range for the subjects of data collection was expanded from previous NHES early childhood components to include infants and toddlers. The core of this survey component collected extensive information on children's participation and experiences in four different types of nonparental care arrangements and early childhood programs: care by relatives, care by nonrelatives, Head Start programs, and other center-based programs. The series of questionnaire items pertaining to each of these types of care arrangements or programs gathered detailed information on the extent of children's current and past participation, arrangement/program location and quality, care/program provider characteristics, the amount of time children spend in arrangements or programs, and the financial cost of these care arrangements or programs to the children's household. The items included in these sections on nonparental care/education arrangements provided information on three

important domains: exposure, access, and quality. Other information collected in this component included children's kindergarten and primary school experiences, personal and household demographic characteristics, parent/guardian characteristics, literacy-related home activities, and children's health and disability status.

The AE component of NHES:1995 focused on the participation of adults (age 16 and older and not enrolled in grade 12 or below) in a wide range of education activities during the past 12 months. Respondents were asked about their participation in seven broadly defined types of adult education activities: adult basic skills and General Educational Development (GED) preparation classes, English as a Second Language (ESL) instruction, credential programs, apprenticeship programs, career- or job-related activities, other formal structured activities, and computer-only or video-only instruction on the job. Respondents who had participated in any of these types of adult education were asked why they participated, the number of days per week and hours per day they attended courses, the provider of the instruction, and whether employer or union support was received. The NHES:1995 AE component also collected information pertaining to three important issues explored in research on participation in adult education: participation rates, motivations for participation, and barriers to participation.

NHES:1996 survey topics

NHES:1996 included both a parent and a youth survey, each addressing the topics of "Parent/Family Involvement in Education" (PFI) and "Civic Involvement" (CI). In addition, a brief survey of only CI items was administered to a small random sample of adults. The PFI component of NHES:1996 addressed National Education Goal 1 (readiness for school) and Goal 8 (parent participation). The CI component of NHES:1996 focused on aspects of Goal 3 (student achievement and citizenship) and Goal 6 (adult literacy and lifelong learning) by assessing knowledge, attitudes, and behaviors that are related to responsible citizenship for adults and youth.

The sampled population for the PFI/CI "Parent Interview" of NHES:1996 included children from age 3 through 12th grade. Topics addressed for the preschool population were attendance at center-based care (including Head Start), feedback from teachers or care providers about problems children may be having in preschool or child care, home learning activities, child disability, and support and training received for parenting. For the kindergarten through 12th-grade population, the "Parent Interview" collected information from parents on family involvement in the following four areas: children's schooling, communication with teachers or other school personnel, children's homework and behavior, and learning activities with children outside of school. In addition, questions were asked about school practices to involve and support families, the school environment, and barriers to family involvement. Information was also collected about potential correlates of family involvement, such as student grades, attendance, grade retention, suspension/expulsion, and characteristics of the child's school or preschool, the child, the family, and the household.

The second component of NHES:1996, the CI component, provided an assessment of the opportunities that youth have to develop the personal responsibility and skills that would facilitate their taking an active role in civic life. The CI component gathered information from both parents and youth related to the diverse ways that parents may socialize their children for informed civic participation, such as through exposure to information about politics or national issues, through discussion of politics and national issues, and by the example of parents who participate in community or civic life. The survey component also asked parents and youth about attitudes that relate to democratic values and civic participation and included a brief assessment of knowledge about government. Students in grades 6 through 12 whose parents had completed a PFI/CI "Parent Interview" were asked about involvement in several types of activities, particularly student government, out-of-school activities, and work for pay. A major focus was on participation in ongoing community service activities, either through the school, through other organizations such as a church or synagogue, or on an individual basis. Other questions assessed the extent of school efforts to support youth community involvement. Students were asked about their opportunity to learn at school about government and national issues and to learn skills that could be transferred to the area of civic involvement.

In order to provide national estimates for all adults, not just parents of students in 6th through 12th grade, some civic involvement items were administered to a small random sample of adults. This sample contained some parents, including parents of students in 6th through 12th grade. The items measured sources of information about politics and national issues, organizational participation, civic

participation, political attitudes, and knowledge of government. Included were a few items related to literacy activities and opinions about improving public education.

NHES:1996 also included a brief topical component to examine public library use by household members. This component was administered to every household, either in the screening interview (referred to as the screener) or an extended interview. The questions included the ways in which household members used public libraries (e.g., for borrowing books, lectures, story hour) and the purposes for using public libraries (e.g., for school assignments, enjoyment, work-related projects). Estimates for these items can be developed at the state level.

NHES:1999 Instruments

There were two types of instruments in NHES:1999: the screener and the extended interviews. The NHES:1999 screener was used to identify eligible households, roster household members as needed for sampling, and sample subjects for extended interviews. It was completed by a household member age 18 or older. This person may or may not have been sampled for an extended interview. The screener was also used to identify the appropriate parent respondents for children selected as interview subjects; that is, the parents or guardians identified as being the most knowledgeable about the child's care and education.

NHES:1999 included four types of extended interviews: a "Parent Interview," a "Youth Interview," an "Adult Education Interview," and an "Adult Special Study Interview." As mentioned above, interviews collected information on several key education topics that have been addressed in NHES over the past decade. In order to choose items for the NHES:1999 extended interviews from the multitude of questions that have been asked in NHES over the decade, several considerations were weighed against each other. These included identifying the items that were consistently used in published estimates by the U.S. Department of Education or other education researchers, evaluating the data needs for measuring the Department's Strategic Plan indicators,* consulting with NHES data users and education researchers about issues they considered important to measure at the end of the decade, and evaluating the content of other studies that could potentially overlap the content of NHES:1999.

*The U.S. Department of Education's Strategic Plan of 1998–2002 outlines priorities that the Department has established to help focus its efforts on improvement of education. As part of the design process for NHES:1999, Strategic Plan Objectives and their indicators were reviewed to discover which might appropriately be measured by data that NHES could provide.

The design of the NHES:1999 interviews reflects the information gleaned from all these sources to define key issues for inclusion in NHES:1999. Also responding to the needs of researchers who use NHES data, an "Adult Special Study Interview" was included as part of the design of NHES:1999. This instrument was similar to the "Adult Education Interview" but contained additional items to address specific methodological issues. It was administered to a small sample of adults.

NHES:1999 "Parent Interview"

As outlined above, NHES has interviewed parents about a variety of education topics, each appropriate for certain age groups of children. To cover the breadth of these topics, the NHES:1999 "Parent Interview" targeted parents with children ranging from newborns to those in 12th grade. As a result, the NHES:1999 "Parent Interview" had six "paths," or sets of questions, appropriate for parents of six subgroups of children: infants and toddlers (children age 2 and younger), preschoolers (children ages 3 through 6 years old and not yet in kindergarten), elementary school students (children in kindergarten through 5th grade), middle or junior high school students (youth in 6th through 8th grade), secondary or high school students (youth in 9th through 12th grade), and children age 5 through 12th grade who were receiving home schooling.

The general topic areas covered in the NHES:1999 "Parent Interview" are listed in table 1. Because not all of these topics are appropriate for each population of children, table 1 is designed to indicate which topics were covered with which populations.

NHES:1999 "Youth Interview"

The NHES:1999 "Youth Interview" was administered to youth in 6th through 12th grade. It was designed to cover the topics from the previous NHES:1996 youth component on civic involvement as well as items on school environment from NHES:1993 and new items on planning for college. The topics covered in the NHES:1999 "Youth Interview" are as follows:

- school learning environment;
- family learning environment;
- plans for future education;
- participation in activities that promote or indicate personal responsibility;
- participation in community service or volunteer activities;

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Table 1.—NHES:1999 Parent Interview: Distribution of topics by population

Interview section	Infant/ toddler (Path I)	Preschool (Path N)		Grades				Home school (Path H)
		Not enrolled	Center-based[1]	K–2 (Path E)	3–5 (Path E)	6–8 (Path M)	9–12 (Path S)	
Demographics	X	X	X	X	X	X	X	X
School/program status		X	X	X	X	X	X	X
Prior center-based experience				X				X
Home schooling								X
School characteristics				X	X	X	X	X[2]
School readiness skills		X	X					
Nonparental care/education	X	X	X					
Training/support for families of preschoolers	X	X	X					
Parents' satisfaction w/school				X	X	X	X	X[2]
Academics and behavior				X	X	X	X	X[2]
Family/school involvement			X	X	X	X	X	X[2]
Before- /after-school care				X	X	X		
Parents' expectations about postsecondary plans						X	X	X
Family involvement out of school	X	X	X	X	X			X
Child health and disability	X	X	X	X	X	X	X	X
Parent characteristics	X	X	X	X	X	X	X	X
Household characteristics	X	X	X	X	X	X	X	X

[1]Center-based programs include day care centers, nursery schools, preschools, and prekindergartens.

[2]These sections were administered if the home-schooled student attended a school for instruction at least 9 hours per week.

NOTE: The path designations are as follows: I for infants and toddlers (children age 2 and younger); N for preschoolers (children ages 3 through 6 years old and not yet in kindergarten); E for elementary school students (children in kindergarten through 5th grade); M for middle or junior high school students (youth in 6th through 8th grade); S for secondary or high school students (youth in 9th through 12th grade); and H for children age 5 through 12th grade who were receiving home schooling.

SOURCE: U.S. Department of Education, National Center for Education Statistics, National Household Education Survey (NHES), 1999. (Originally published as table 1-1 on p. 8 of the complete report from which this article is excerpted.)

- exposure to information about politics and national issues;
- political attitudes and knowledge;
- skills related to civic participation; and
- type and purpose of community service.

The "Youth Interview" included a special section of items about community service participation not fielded in NHES:1996. These additional questions, designed in response to specific requests from the research community, were administered to a subsample of youth who reported participation in community service. The items measured type and sponsor of the service activity and are designed to assist researchers in categorizing types and purposes of participation.

NHES:1999 "Adult Education Interview"

Participation in adult education activities has been the primary topic of interest in NHES surveys of adults over the decade, addressed in both NHES:1991 and NHES:1995. This focus was reflected in the design of the NHES:1999 "Adult Education Interview"; however, a few questions on other topics identified as important to measure at the end of the decade, such as the U.S. Department of Education's Strategic Plan topics, were also included. The topics included in the NHES:1999 "Adult Education Interview" are listed below:

- educational background and work experience;
- participation in several types of adult education;
  - English as a Second Language
  - basic skills and GED preparation courses

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- courses as part of credential programs
- apprenticeship programs
- career- or job-related courses
- personal interest and development courses

- participation in education activities through distance learning;
- other general information about education activities (e.g., use of Lifetime Learning tax credit);
- literacy activities;
- community involvement;
- adult demographic characteristics; and
- household characteristics.

NHES:1999 "Adult Special Study Interview"

This interview was very similar to the "Adult Education Interview." It differed only in that it contained additional questions to explore certain methodological issues. These follow-up questions were included to improve the recall of work-related and personal development education activities. If these new follow-up questions contribute to a more accurate measure of adult education participation, differences in participation rates gathered by this instrument and by the "Adult Education Interview" will provide a crosswalk should the new items become part of future NHES designs. The difference in estimates will enable researchers to gauge what percentage of higher estimates might be attributable to better measures rather than to increased rates of participation, and therefore preserve comparability with estimates from NHES:1991 and NHES:1995. Also, race and ethnicity were measured by two sets of items, the items used in past NHES surveys and in the regular NHES:1999 "Adult Education Interview," and the items recently developed by the Office of Management and Budget (OMB). The two sets of questions differ on two attributes: the question order and the capture of information on multiracial persons.

In the set of items traditionally used in NHES, the Hispanic origin question is administered after the race question, whereas in the OMB version, the Hispanic origin question precedes the race question. In the OMB version, the respondent is asked to choose all races that apply; in the standard NHES version, "more than one race/biracial/multiracial" is given as a response category. Self-identification of race and ethnicity in response to the two sets of questions can be compared. Finally, there is interest in the effect of various telephone technologies on RDD surveys. Questions in the "Adult Special Study Interview" about the use of technologies such as answering machines and caller ID permit exploration of this issue. A forthcoming working paper will describe the results of the "Adult Special Study Interview."

Data source: The NCES National Household Education Survey (NHES), 1999.

For technical information, see the complete report:

Nolin, M.J., Montaquila, J., Nicchitta, P., Kim, K., Kleiner, B., Lennon, J., Chapman, C., Creighton, S., and Bielick, S. (2000). *National Household Education Survey of 1999: Methodology Report* (NCES 2000–078).

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To obtain the complete report (NCES 2000–078), call the toll-free ED Pubs number (877–433–7827), visit the NCES Web Site *(http://nces.ed.gov)*, or contact GPO (202–512–1800).

Data Products, Other Publications, and Funding Opportunities

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Data Products

Early Childhood Longitudinal Study, Kindergarten Class of 1998–99: Base Year Public-Use Data Files and User's Manual

This CD-ROM contains base-year data from the Early Childhood Longitudinal Study, Kindergarten Class of 1998–99 (ECLS-K). ECLS-K follows a nationally representative sample of about 22,000 kindergartners through the fifth grade, measuring their home and academic environments, opportunities, and achievements.

The CD-ROM contains an Electronic Codebook (ECB), data files, and a user's manual with survey and ECB documentation. The ECB program can be used to (1) examine variables in the base-year (fall and spring kindergarten) ECLS-K data sets; (2) examine question wording, response categories, and frequency distributions; and (3) select and extract variables along with the appropriate code needed to create SAS, SPSS-PC, and STATA data sets. The CD-ROM contains three data files, at the child, teacher, and school levels.

For questions about this CD-ROM, contact Jonaki Bose *(jonaki_bose@ed.gov)* or Jerry West *(jerry_west@ed.gov)*.

To obtain this CD-ROM (NCES 2001–029), call the toll-free ED Pubs number (877–433–7827).

Data File: CCD Public Elementary/Secondary School Universe Survey: School Year 1998–1999

Part of the NCES Common Core of Data (CCD), the "Public Elementary/Secondary School Universe Survey" has two primary purposes: (1) to list all public elementary and secondary schools in the 50 states, District of Columbia, five outlying areas, and Bureau of Indian Affairs and Department of Defense Dependents (overseas) schools; and (2) to provide basic information and descriptive statistics on schools, students, and teachers. Data are provided annually by state education agencies

(SEAs) from their administrative records. The 1998–99 data set contains 94,133 records, one for each of the listed schools.

The following information is included for each school: NCES and state school identification number; name and ID number of the agency that operates the school; name, address, and phone number of the school; school type (regular, special education, vocational education, and alternative); locale code (seven categories, from urban to rural); number of students, by grade and ungraded; number of students eligible for free lunch; number of students by race/ethnicity (five categories); and number of full-time-equivalent (FTE) teachers. Starting with the 1998–99 file, the following new information is included for schools: charter, magnet, and Title status of school; number of students eligible for reduced-price lunch; and number of migrant students.

The data can be downloaded from the NCES Web Site either in SAS files or in flat files that can be used with other statistical processing programs, such as SPSS. Documentation is provided in separate files.

For questions about this data product, contact John Sietsema *(john_sietsema@ed.gov).*

To obtain this data product (NCES 2000–365), visit the NCES Web Site *(http://nces.ed.gov).*

Data File: CCD Local Education Agency Universe Survey: School Year 1998–1999

The Common Core of Data (CCD) "Local Education Agency Universe Survey" is one of the five surveys that make up the CCD collection of surveys. This survey provides (1) a complete listing of all education agencies responsible for providing free public elementary/secondary instruction or education support services; and (2) basic information about these education agencies and the students for whose education they are responsible. Most of the agencies listed are school districts or other local education agencies (LEAs). The data are provided annually by state education agencies (SEAs) from their administrative records. The 1998–99 data set contains 16,783 records, one for each public elementary/secondary education agency in the 50 states, District of Columbia, five outlying areas, and Bureau of Indian Affairs and Department of Defense Dependents (overseas) schools.

The data file includes the following information for each listed agency: NCES and state identification numbers; agency name, address, and phone number; agency type (regular school district, component of supervisory union, headquarters of supervisory union, regional education service agency, state-operated agency, federally operated agency, or other); county code; metropolitan status code; number of students (ungraded and total prekindergarten through grade 12); number of students in special education programs; number of high school completers; dropout data for grades 7–12; and number of instructional and support staff, by occupational category. Starting with the 1998–99 file, the following new information is included for agencies: number of migrant students and number of limited-English-proficient students.

The data can be downloaded from the NCES Web Site either as a SAS file or as a flat file that can be used with other statistical processing programs, such as SPSS. Documentation is provided in separate files.

For questions about this data product, contact John Sietsema *(john_sietsema@ed.gov).*

To obtain this data product (NCES 2000–346), visit the NCES Web Site *(http://nces.ed.gov).*

Other Publications

Building an Automated Student Record System: A Step-by-Step Guide for Local and State Education Agencies

Barbara Clements

This booklet, developed by the National Forum on Education Statistics (NFES), is a stand-alone guide for local and state education agencies faced with the task of planning for, designing, and implementing an automated student record system. While based on a chapter from the *Student Data Handbook for Elementary, Secondary, and Early Childhood Education* (NCES 2000–343), this guide contains additional information from a variety of resources, most of which are cited in the text. Included in the contents are guidelines, checklists, and real-life examples.

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To obtain this booklet (NCES 2000–324), call the toll-free ED Pubs number (877–433–7827) or visit the NCES Web Site *(http://nces.ed.gov).*

National Household Education Survey of 1999: Data File User's Manual

Mary Jo Nolin, Jill Montaquila, Jean Lennon, Brian Kleiner, Kwang Kim, Christopher Chapman, Kathryn Chandler, Sean Creighton, and Stacey Bielick

The *National Household Education Survey of 1999: Data File User's Manual* provides comprehensive documentation and guidance for users of the three public-release data files of the National Household Education Survey of 1999 (NHES:1999)—the "Parent Interview," the "Youth Interview," and the "Adult Education Interview." The NHES:1999 interviews were conducted using a random-digit-dial (RDD) telephone survey of households in the United States. The 1999 survey included a compilation of key items from previous NHES surveys on early childhood program participation, family involvement in children's education, school readiness, civic and community involvement, and adult education activities.

The *User's Manual* contains four volumes. Volume I provides information about the purpose of the study, survey questionnaires, the sample design, data collection and data processing procedures, and a brief guide to the data files. Volumes II through IV each include a guide to one of the three public-release data files, discussion of data considerations and anomalies, and a data file codebook.

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To obtain this user's manual [NCES 2000–076 (volume I), 2000–081 (volume II), 2000–082 (volume III), and 2000–077 (volume IV)], call the toll-free ED Pubs number (877–433–7827), visit the NCES Web Site (*http://nces.ed.gov*), or contact GPO (202–512–1800).

Funding Opportunities

The AERA Grants Program

Jointly funded by the National Science Foundation (NSF), NCES, and the Office of Educational Research and Improvement (OERI), this training and research program is administered by the American Educational Research Association (AERA). The program has four major elements: a research grants program, a dissertation grants program, a fellows program, and a training institute. The program is intended to enhance the capability of the U.S. research community to use large-scale data sets, specifically those of the NSF and NCES, to conduct studies that are relevant to educational policy and practice, and to strengthen communications between the educational research community and government staff.

Applications for this program may be submitted at any time. The application review board meets three times per year.

For more information, contact Edith McArthur (*edith_mcarthur@ed.gov*) or visit the AERA Grants Program Web Site (*http://aera.ucsb.edu*).

The NAEP Secondary Analysis Grant Program

The NAEP Secondary Analysis Grant Program was developed to encourage educational researchers to conduct secondary analysis studies using data from the National Assessment of Educational Progress (NAEP) and the NAEP High School Transcript Studies. This program is open to all public or private organizations and consortia of organizations. The program is typically announced annually, in the late fall, in the *Federal Register*. Grants awarded under this program run from 12 to 18 months and awards range from $15,000 to $100,000.

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